Environmental Analysis

For The

Mill Pocket Salvage
Timber Sale

Prepared By:

Kyle Johnson, Management Forester
Plains Unit, Northwestern Land Office

Montana Department of Natural Resources and Conservation

December 5, 2007

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MEMORANDUM

To: Kyle Johnson

From: Larry Ballantyne, Plains Unit Manager, MT DNRC

Subject: Mill Pocket Fire Salvage

Date: October 8, 2007

Primary Objective:

The primary objective of fire salvage operations following the Chippy Creek Fire is to effectively recover value of timber killed, damaged, or otherwise injured during the fire event of August/September 2007. Loss to the associated trusts is to be minimized. Administrative rules as applicable to salvage operations shall be applied to this project.

Secondary Objective:

The secondary objective for this project is to promote timber regeneration and vegetative recovery on Trust lands burned in the fire event. Measures to promote natural regeneration as well as tree planting will be addressed in prescriptions for this project.

CHECKLIST ENVIRONMENTAL ASSESSMENT

Project Name:	Mill Pocket Salvage
Proposed Implementation Date:	December 20, 2007
Proponent:	Department of Natural Resources and Conservation, Northwest Land Office, Plains Unit
Location:	Section 36, Township 24 North, Range 25 West.
County:	Sanders

I. TYPE AND PURPOSE OF ACTION

The Department of Natural Resources and Conservation (DNRC) proposes to sell approximately 21,000 tons (3.4 MMBF**)** of salvage timber in the Mill Creek Drainage, Section 36, Township 24 North, Range 25 West, approximately 13 air miles north of Hot Springs, Montana. This action would produce estimated revenue of $525,000.00 for the Common Schools (C. S.) Trust Grant. Under the proposed action, DNRC would salvage timber killed, damaged, or otherwise injured during the Chippy Creek Fire, as well as timber affected by previous insect and diseases outbreaks. The project is designed to effectively recover the value of the timber before decay occurs, and minimize loss associated to the Common Schools Trust. The harvest prescriptions are designed to promote timber types historically found in the area, improve forest health and promote regeneration of the project area (See Attachment I, Area Maps and Project Plan; Attachment IV, Harvest Prescriptions). If the Action Alternative is selected, activities would begin December 20, 2007.

In addition to timber harvesting, approximately .78 miles of new road would be constructed, 1.7 miles of road would be reconditioned and approximately 6.5 miles of road would be maintained or have minor drainage improvements installed as necessary to meet Best Management Practices (BMP) (See Attachment 1, Area Maps and Project Plan).

Lands involved in this proposed project are held by the State of Montana in trust for the support of specific beneficiary institutions such as the public buildings trust, public schools, state colleges, universities, and other state institutions (Enabling Act of February 22, 1889:1972 Montana Constitution, Article X Section11). The Board of Land Commissioners and the Department of Natural Resources and Conservation are required, by law, to administer these trust lands to produce the largest measure of reasonable and legitimate return over the long run for these beneficiary institutions (Section 77-1-202, MCA). The DNRC would manage lands involved in this project in accordance with the State Forest Land Management Plan (DNRC 1996) and the Administrative Rules for Forest Management (ARM 36.11.401 through 450) as well as other applicable state and federal laws.

II. PROJECT DEVELOPMENT

1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED:
Provide a brief chronology of the scoping and ongoing involvement for this project.

This project has been developed in response to the Chippy Creek Fire of August, 2007. Public involvement has been solicited through newspaper advertisements and through letters sent to the Confederated Salish & Kootenai Tribes (CS&KT), as well as other known interested parties and organizations. Public response was received and used to assist in identifying issues surrounding the proposed project. Hydrological, soils, wildlife, archaeological, and vegetative concerns were identified by DNRC specialists and field foresters for both the No-Action and the Action

Alternatives. Issues and concerns have been resolved or mitigated through project design and/or would be included as specific contractual requirements of the project. Recommendations to minimize direct, indirect, and cumulative impacts have been incorporated in the project design (see Attachment I, Area Maps and Project Plan; Attachment II, Resource Analyses; Attachment IV, Harvest Prescriptions; Attachment V, Mitigations; Attachment VI, Consultants and References).

2. OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:

The DNRC has applied for Cultural Clearance, and Temporary Road Use Permits from the Confederated Salish & Kootenai Tribes (CS&KT).

3. ALTERNATIVES CONSIDERED:

No Action: Under the No Action alternative, no activity would be undertaken. No salvage timber would be harvested and no road construction or improvements would occur.
Action: The Action Alternative is shown in Section 1, Type and Purpose of Action. No other action alternatives were identified during project scoping or analysis; therefore only forest product removal and sale are analyzed in the EA Checklist.

III. IMPACTS ON THE PHYSICAL ENVIRONMENT

- *RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.*
- *Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.*
- *Enter "NONE" If no impacts are identified or the resource is not present.*

4. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:
Consider the presence of fragile, compactable or unstable soils. Identify unusual geologic features. Specify any special reclamation considerations. Identify any cumulative impacts to soils.

A DNRC soils scientist has reviewed the project area, transportation system and harvest plan. Recommendations to minimize direct, indirect, and cumulative impacts have been incorporated in the project design. (Attachment I, Area Maps and Project Plan: Attachment II, Resource Analyses, Soils Analysis: Attachment IV, Harvest Prescriptions: Attachment V, Mitigations). As detailed in the Soils Analysis, no substantial direct, indirect or cumulative impacts to soils resources are expected to result from the implementation of the Action Alternative.

5. WATER QUALITY, QUANTITY AND DISTRIBUTION:
Identify important surface or groundwater resources. Consider the potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality. Identi0fy cumulative effects to water resources.

Recommendations from DNRC specialists to minimize direct, indirect, and cumulative impacts have been incorporated in the project design (See Attachment II, Resource Analyses, Hydrology/Fisheries Analysis/Soils Analysis; Attachment V Mitigations). As detailed in the Hydrology/Fisheries Analysis, no substantial direct, indirect or cumulative impacts to water quality or downstream beneficial uses are expected to result from the implementation of the Action Alternative.

6. AIR QUALITY:
What pollutants or particulate would be produced? Identify air quality regulations or zones (e.g. Class I air shed) the project would influence. Identify cumulative effects to air quality.

The project is located in Montana State Airshed 2; it is not within a Class 1 Airshed.
Some particulate matter would be introduced into the Airshed from the burning of logging slash. Impacts are expected to be minor and temporary with slash burning to be conducted when conditions favor good to excellent smoke dispersion. All burning would be conducted during times of adequate ventilation within the existing rules and regulations. Thus direct, indirect, and cumulative effects to air quality are expected to be minimal.

7. VEGETATION COVER, QUANTITY AND QUALITY:

What changes would the action cause to vegetative communities? Consider rare plants or cover types that would be affected. Identify cumulative effects to vegetation.

The Chippy Creek Fire had a stand replacement effect on the project area, moving the vegetation towards an earlier successional stage. Silvicultural prescriptions have been developed to remove the fire-killed and damaged trees, determined by bole char, percentage of crown scorching and root damage, as a result of fire. Harvest prescriptions also aim to remove diseased and insect infested timber. Recommendations to minimize direct, indirect and cumulative impacts have been incorporated in the project design (see Attachment I, Area Maps and Project Plan: Attachment II, Resource Analyses, Vegetation Analysis, Attachment IV, Harvest Prescriptions; Attachment V, Mitigations).
Approximately 4 acres would be removed from timber production to create road access into the sale area. No old growth stands as defined by Green et al. (1992) are present in the project area; therefore the action alternative would not affect old growth. No sensitive plants listed by the Montana Natural Heritage Program have been identified in the project area. Measures to minimize noxious weeds, insects and disease are included in the project design (See Attachment V, Mitigations).

8. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:

Consider substantial habitat values and use of the area by wildlife, birds or fish. Identify cumulative effects to fish and wildlife.

Recommendations from DNRC specialists to minimize direct, indirect, and cumulative impacts have been incorporated in the project design. (Attachment I, Area Maps and Project Plan: Attachment II, Resource Analyses, Wildlife Analysis / Hydrology/Fisheries Analysis: Attachment IV, Harvest Prescriptions: Attachment V, Mitigations).
As detailed in the Wildlife Analysis and the Hydrology/Fisheries Analysis, no substantial direct, indirect or cumulative impacts to terrestrial, avian and aquatic species and habitats are expected to result from the implementation of the Action Alternative.

9. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:

Consider any federally listed threatened or endangered species or habitat identified in the project area. Determine effects to wetlands. Consider Sensitive Species or Species of special concern. Identify cumulative effects to these species and their habitat.

Recommendations from DNRC specialists to minimize direct, indirect, and cumulative impacts have been incorporated in the project design. (Attachment I, Area Maps and Project Plan: Attachment II, Resource Analyses, Wildlife Analysis: Attachment IV, Harvest Prescriptions: Attachment V, Mitigations). As detailed in the Wildlife Analysis, no substantial direct, indirect or cumulative impacts to unique, endangered, fragile or limited environmental resources are expected to result from the implementation of the Action Alternative.
An Alternative Practice to the Forest Management Rules has been approved to allow mechanized harvest activity during the black back woodpecker nesting period from April 15 to July 1(See Attachment II, Resource Analysis, Wildlife Analysis; Attachment III: Alternative Practices to the State Forest Land Management Rules).

10. HISTORICAL AND ARCHAEOLOGICAL SITES:

Identify and determine effects to historical, archaeological or paleontological resources.

A DNRC Archaeologist has reviewed the project area and harvest plan. Recommendations from a DNRC Archaeologist to minimize direct, indirect, and cumulative impacts have been incorporated in the project design. (Attachment I, Area Maps and Project Plan: Attachment II, Resource Analyses, Cultural Resources Inventory: Attachment IV, Harvest Prescriptions: Attachment V, Mitigations).
As detailed in the Cultural Resources Inventory, one cultural property was identified. The site will be flagged and avoided during the proposed timber harvest. Any evidence of cultural resources discovered during sale administration will be left undisturbed and reported to the Tribal Preservation Department.
Therefore: no substantial direct, indirect or cumulative impacts to historical, archaeological or paleontological resources are expected to result from the implementation of the Action Alternative.

11. AESTHETICS:

Determine if the project is located on a prominent topographic feature, or may be visible from populated or scenic areas. What level of noise, light or visual change would be produced? Identify cumulative effects to aesthetics.

Portions of the project will be visible from the Niarada Road, as well as theL2000 and L2050 Roads, however the area has been largely burned. Openings or disturbance from skyline corridors and skid trails would be visible upon completion of the project; however changes in tree cover density would be mostly negligible due the loss of canopy cover from the fire. The harvest prescriptions and the use of skyline yarding systems should minimize the visual impacts. Thus direct, indirect, and cumulative impacts to aesthetics are expected to be minimal.

12. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:

Determine the amount of limited resources the project would require. Identify other activities nearby that the project would affect. Identify cumulative effects to environmental resources.

No direct, indirect, or cumulative impacts would likely occur under either alternative.

13. OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:

List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.

Confederated Salish & Kootenai Tribes, Chippy Salvage Sale Environmental Analysis (2007)

IV. IMPACTS ON THE HUMAN POPULATION

- *RESOURCES potentially impacted are listed on the form, followed by common issues that would be considered.*
- *Explain POTENTIAL IMPACTS AND MITIGATIONS following each resource heading.*
- *Enter "NONE" If no impacts are identified or the resource is not present.*

14. HUMAN HEALTH AND SAFETY:

Identify any health and safety risks posed by the project.

Human health would not be impacted by the proposed timber sale or associated activity. There are no unusual safety considerations associated with the proposed timber sale.

15. INDUSTRIAL, COMMERCIAL AND AGRICULTURE ACTIVITIES AND PRODUCTION:
Identify how the project would add to or alter these activities.

Timber harvest would provide continuing industrial production in the Plains & Hot Springs areas.

16. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:
Estimate the number of jobs the project would create, move or eliminate. Identify cumulative effects to the employment market.

People are currently employed in the wood products industry in the region. Due to the relatively small size of the timber sale, there would be no measurable direct, indirect, or cumulative impacts from this proposed action.

17. LOCAL AND STATE TAX BASE AND TAX REVENUES:
Estimate tax revenue the project would create or eliminate. Identify cumulative effects to taxes and revenue.

People are currently paying taxes from the wood products industry in the region. Due to the relatively small size of the timber sale, there would be no measurable direct, indirect, or cumulative impacts from this proposed action on tax revenues.

18. DEMAND FOR GOVERNMENT SERVICES:
Estimate increases in traffic and changes to traffic patterns. What changes would be needed to fire protection, police, schools, etc.? Identify cumulative effects of this and other projects on government services

Log trucks hauling to the purchasing mill would result in temporary increases in traffic on Road L2050, Road L2000, Mill Creek Road, Niarada Road, and Highways 28.
This increase is a normal contributor to the activities of the local community and industrial base and cannot be considered a new or increased source.

19. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:
List State, County, City, USFS, BLM, Tribal, and other zoning or management plans, and identify how they would affect this project.

The project area is located with in a CS&KT special management area. The DNRC has sought tribal input during project development and requested Cultural Clearance for the project.

On June 17, 1996, the Land Board approved the State Forest Land Management Plan (SFLMP). The SFLMP provides the philosophy adopted by DNRC through programmatic review (DNRC, 1996). The DNRC will manage the lands in this project according to this philosophy, which states:

> *Our premise is that the best way to produce long-term income for the trust is to manage intensively for healthy and biological diverse forests. Our understanding is that a diverse forest is a stable forest that will produce the most reliable and highest long-term revenue stream… In the foreseeable future, timber management will continue to be our primary source of revenue and our primary tool for achieving biodiversity objectives.*

On March 13, 2003, the DNRC adopted Administrative Rules for Forest Management (Rules) (Administrative Rules of Montana [ARM] 36.11.401 through 450). The Rules provide DNRC personnel with consistent policy, direction, and guidance for the management of forested trust lands. Together, the SFLMP and Rules define the programmatic framework for this project.

20. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:
Identify any wilderness or recreational areas nearby or access routes through this tract. Determine the effects of the project on recreational potential within the tract. Identify cumulative effects to recreational and wilderness activities.

The area is likely hunted by tribal members. Roads through the area that would be closed after the project only access the immediate area, therefore closure of them would not affect the ability of people to recreate on these parcels. Recreational areas and wilderness are not accessed through this tract. Use is expected to remain the same following this project.

21. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:
Estimate population changes and additional housing the project would require. Identify cumulative effects to population and housing.

There would be no measurable direct, indirect, or cumulative impacts related to population and housing due to the relatively small size of the timber sale, and the fact that people are already employed in this occupation in the region.

22. SOCIAL STRUCTURES AND MORES:
Identify potential disruption of native or traditional lifestyles or communities.

No direct, indirect, or cumulative impacts related to social structures and mores would be expected under either alternative.

23. CULTURAL UNIQUENESS AND DIVERSITY:
How would the action affect any unique quality of the area?

No direct, indirect, or cumulative impacts related to cultural uniqueness and diversity would be expected under either alternative.

24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:
Estimate the return to the trust. Include appropriate economic analysis. Identify potential future uses for the analysis area other than existing management. Identify cumulative economic and social effects likely to occur as a result of the proposed action.

Costs, revenues and estimates of return are estimates intended for relative comparison of alternatives. They are not intended to be used as absolute estimates of return. The estimated stumpage is based on comparable sales analysis. This method compares recent sales to find a market value for stumpage. These sales have similar species, quality, average diameter, product mix, terrain, date of sale, distance from mills, road building and logging systems, terms of sale, or anything that could affect a buyer's willingness to pay for. The Action Alternative would generate an estimated return to the school trusts of $525,000.00.
Under the No Action Alternative, the monetary value of the fire-killed and stressed timber would be lost to decay. There would be essentially no possibility for return to the Common School Trusts from this parcel until the completion of the next full stand growing cycle, likely 50 – 80 years from the time of the fire.

EA Checklist Prepared By:	**Name:**	Kyle Johnson	**Date:**	11-16-2007
	Title:	Management Forester		

V. FINDING

25. ALTERNATIVE SELECTED:

The Action Alternative meets all stated project objectives and is selected for implementation.

26. SIGNIFICANCE OF POTENTIAL IMPACTS:

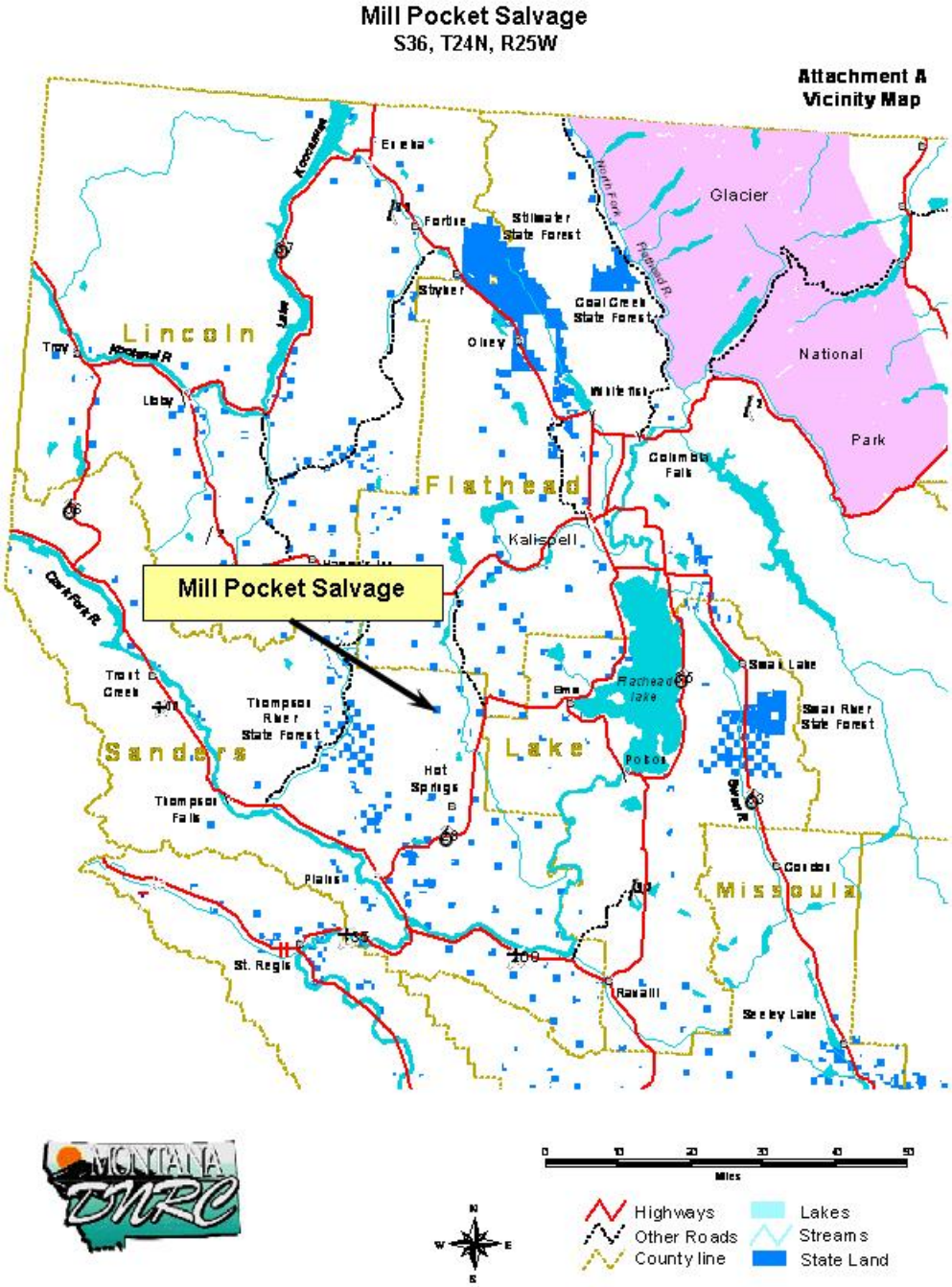
No significant impacts have been identified as a result of implementing the Action Alternative.

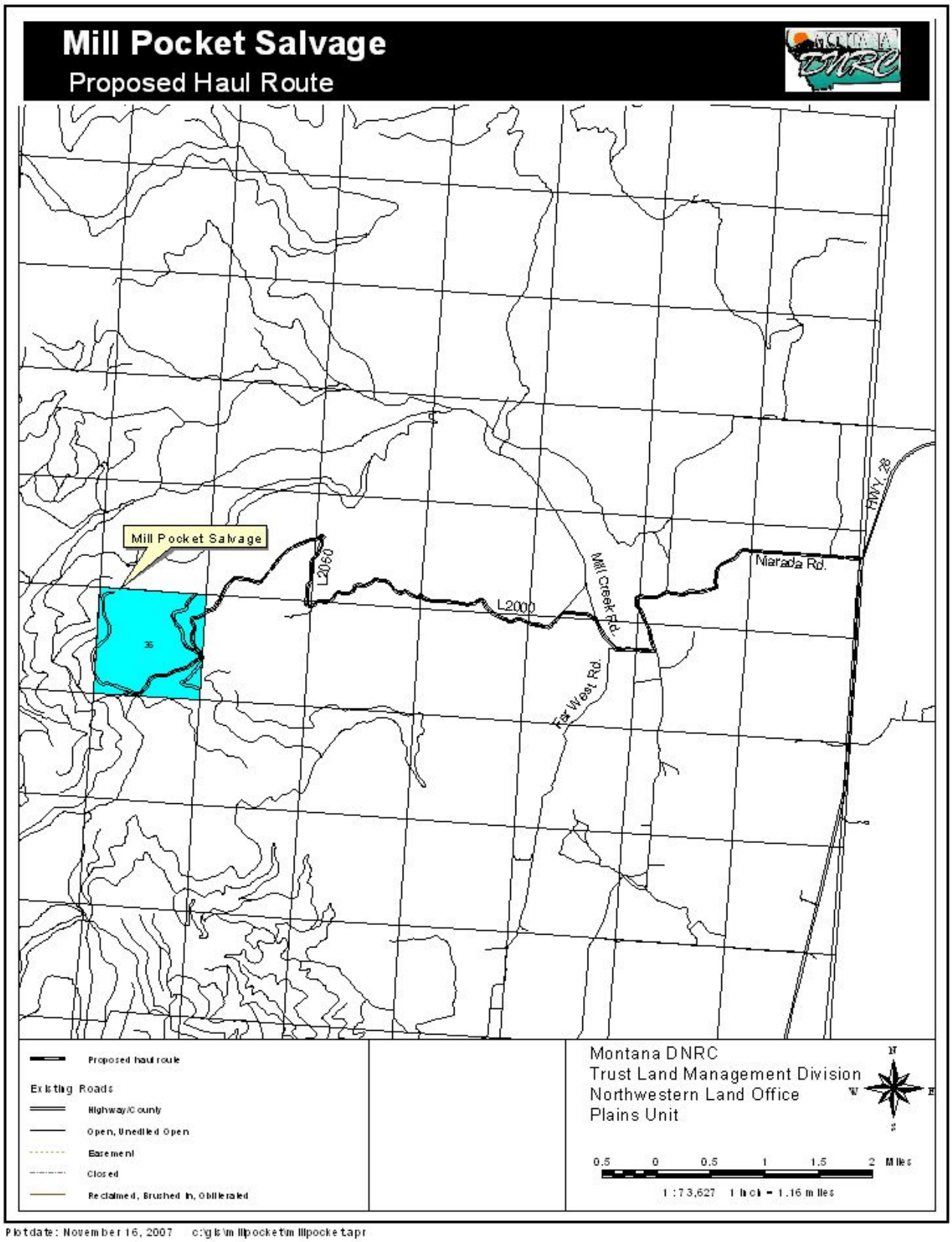
27. NEED FOR FURTHER ENVIRONMENTAL ANALYSIS:

	EIS		More Detailed EA	X	No Further Analysis

EA Checklist Approved By:	**Name:** Larry Ballantyne **Title:** Plains Unit Manager	
Signature:		**Date:** December 5, 2007

Attachment I
Area Maps and Project Plan


Mill Pocket Salvage
S36, T24N, R25W
Attachment A
Vicinity Map
Mill Pocket Salvage
Lincoln
Flathead
Sanders
Lake
Missoula
Glacier
National
Park
Eureka
Fortine
Stillwater State Forest
Coal Creek State Forest
Stryker
Olney
Whitefish
Columbia Falls
Kalispell
Libby
Troy
Trout Creek
Thompson River State Forest
Thompson Falls
Hot Springs
Plains
St. Regis
Ronan
Polson
Swan Lake
Swan River State Forest
Seeley Lake
Clarkfork R.
Kootenai R.
Flathead R.
Miles
Highways
Other Roads
County line
Lakes
Streams
State Land



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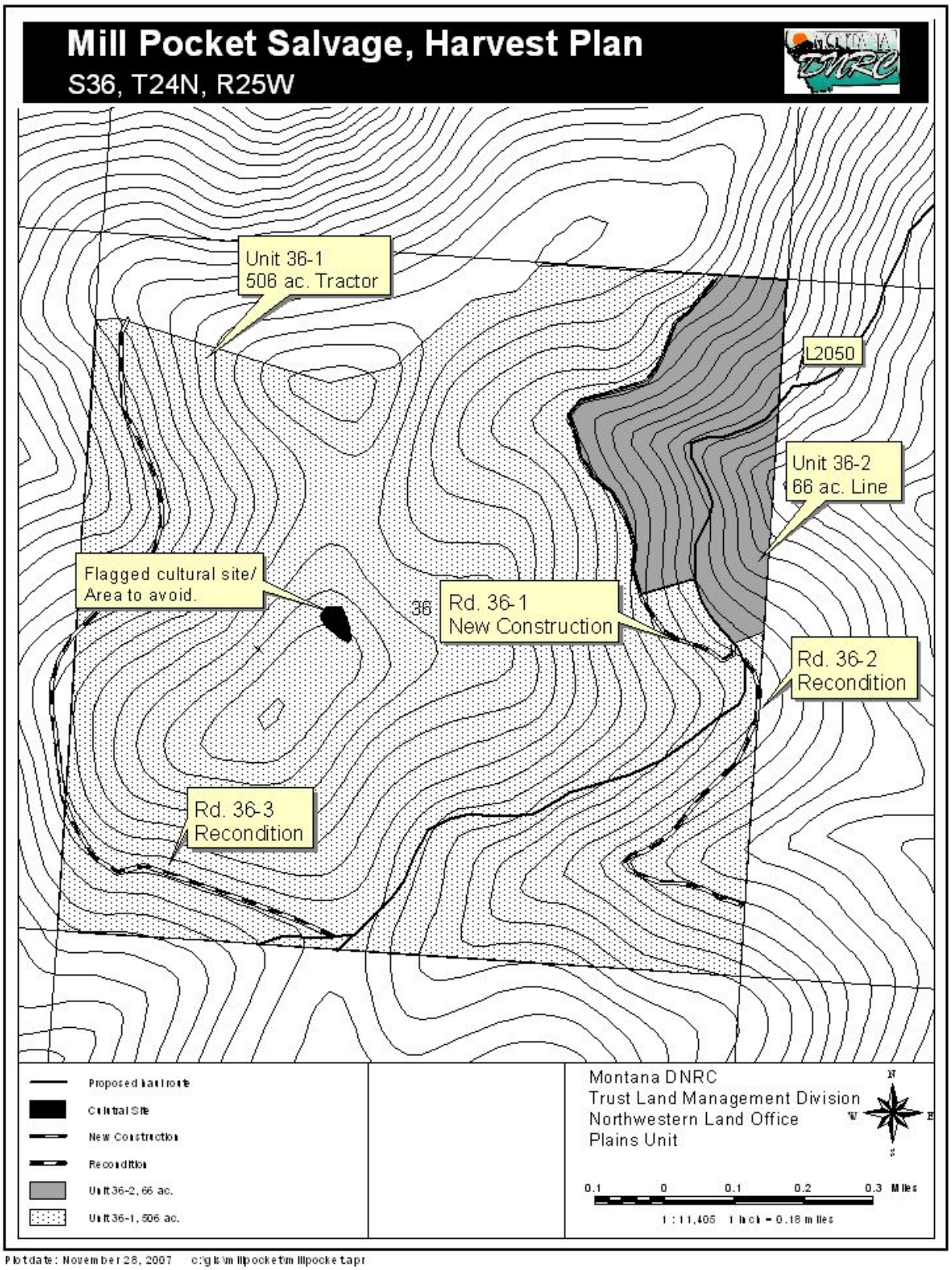
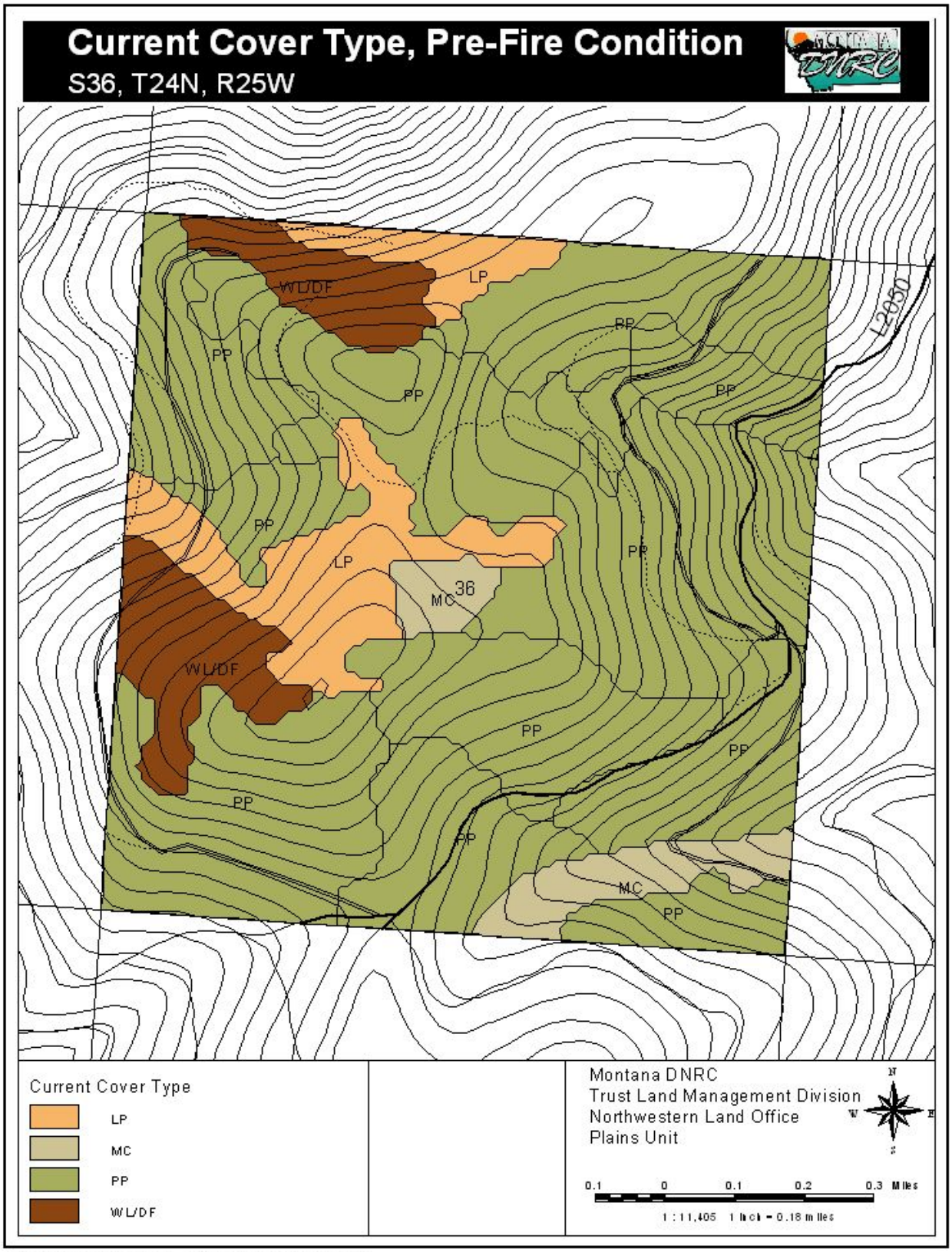

Mill Pocket Salvage, Harvest Plan
S36, T24N, R25W
Unit 36-1
506 ac. Tractor
L2050
Unit 36-2
66 ac. Line
Flagged cultural site/
Area to avoid.
36
Rd. 36-1
New Construction
Rd. 36-2
Recondition
Rd. 36-3
Recondition
Proposed Haul route
Cultural Site
New Construction
Recondition
Unit 36-2, 66 ac.
Unit 36-1, 506 ac.
Montana DNRC
Trust Land Management Division
Northwestern Land Office
Plains Unit
N
W
E
S
0.1 0 0.1 0.2 0.3 Miles
1 : 11,405 1 inch = 0.18 miles
Plot date: November 28, 2007 c:\gis\millpocket\millpocket.apr



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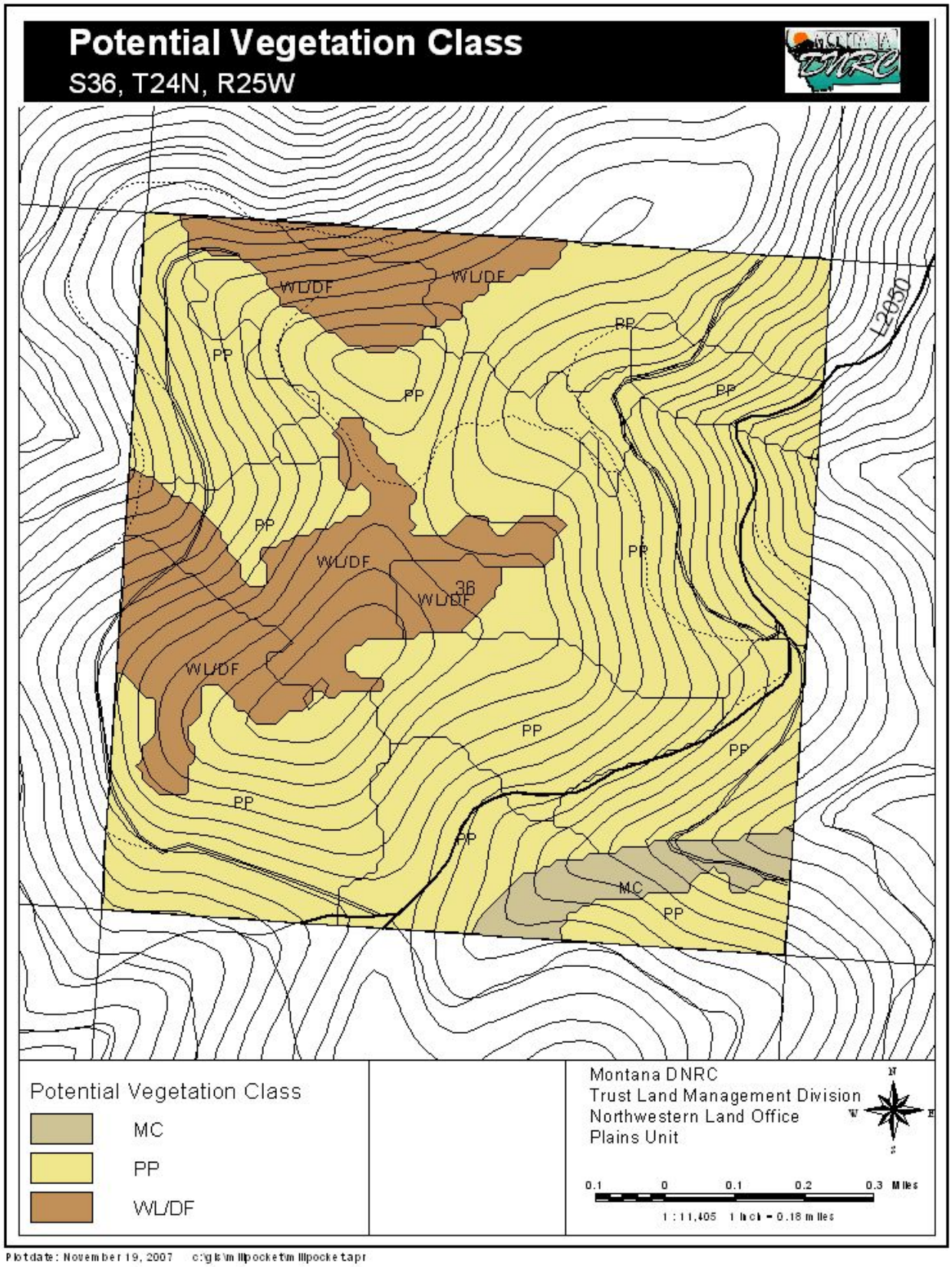
Potential Vegetation Class
S36, T24N, R25W
WL/DF
PP
MC
36
L2050
Potential Vegetation Class
MC
PP
WL/DF
Montana DNRC
Trust Land Management Division
Northwestern Land Office
Plains Unit
0.1 0 0.1 0.2 0.3 Miles
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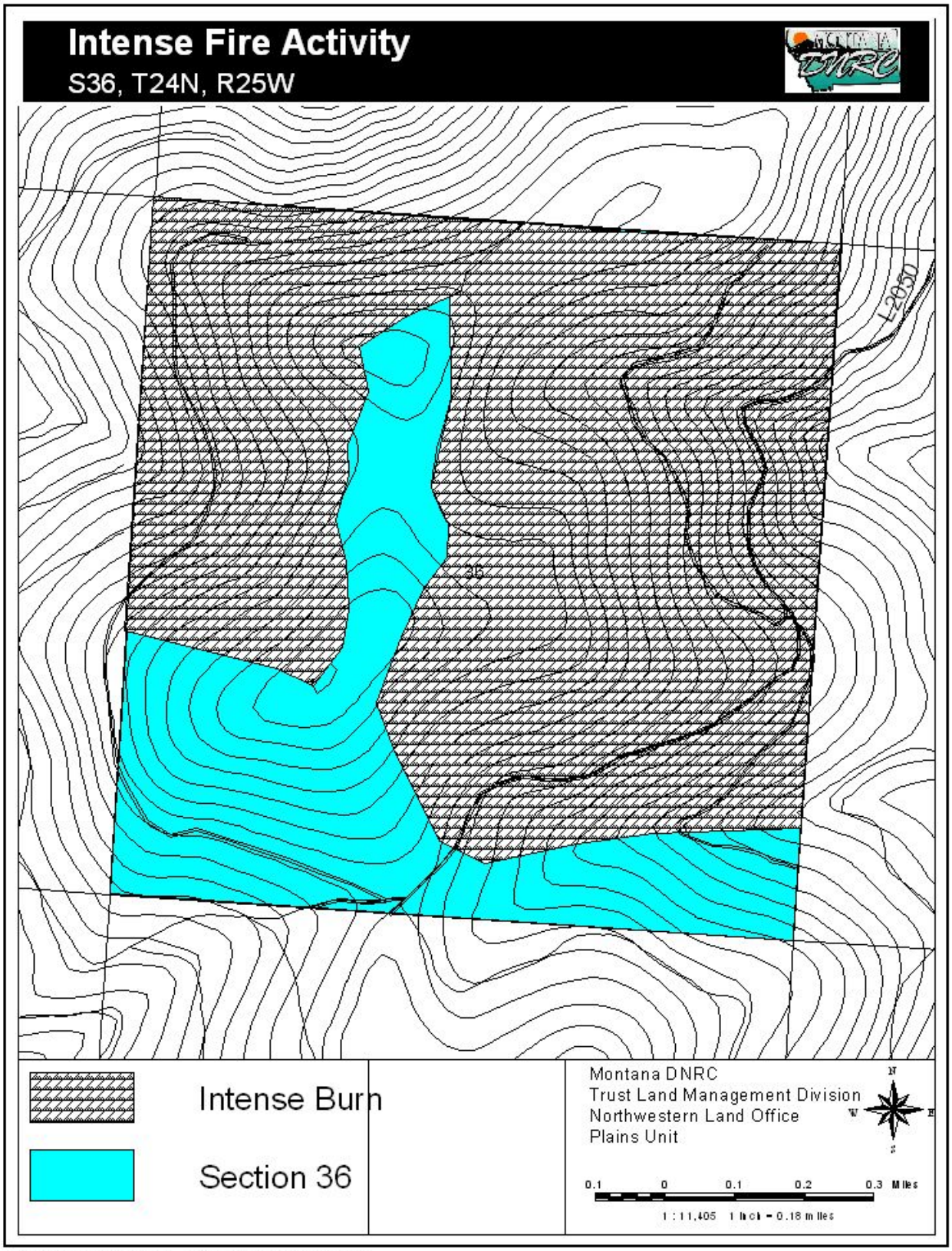

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Attachment II
Resource Analysis

Vegetation Analysis

Introduction
This analysis is designed to disclose the existing condition of the vegetative resource and display the anticipated effects that may result from each alternative of this proposal. During the initial scoping, issues were developed regarding vegetative concerns. The following concerns were expressed from these comments regarding proposed timber harvesting and related activities:

- Concern for a timely salvage of recently burned timber.
- Forest Health: there are concerns that endemic populations of diseases and insects could increase in the fire perimeter and surrounding area and have the potential to reach epidemic proportions or reduce productivity.
- Concern for soils erosion with the combination of the vegetation and duff layers that are burned and the use of equipment on erodible soils.

Analysis Area
The analysis area for direct and indirect effects is the State Section 36 of T24N R25W referred to as the Mill Pocket parcel. Cumulative impacts are considered at the scale of the Plains Unit.

Analysis Method
The Plains Unit typically prepares two to four timber sales per year. Each proposed project is evaluated for its potential effects on lands managed by the DNRC and the surrounding landscape. Methods used in the analysis included review of stand level inventory (SLI) data, field visits, review of scientific literature, aerial photography, and consultation with other professionals.

Existing Condition
Past and current events have changed the forest conditions on the proposed area from what would have been present historically according to Losensky's "Historical Vegetation of Montana" (1997). The area was historically characterized by frequent, low-intensity wildfires prior to the early 1900's. Until the Chippy Creek Fire of 2007, fire has been generally absent from the area since the early 1900's.

Logging activities have occurred on the proposed project area since the late 1940's. Section records for the Mill Pocket parcel show timber harvests totaling 5.9 million board feet from 1948 – 50. There have also been numerous post and Christmas tree removal permits in the parcel, the last being issued in 1960. There is an area of approximately 15 acres with evidence of unauthorized post and pole harvest in the parcel, which occurred approximately 10 – 20 years ago. Pre-fire Current Cover Types and Potential Vegetation Class stand maps can be viewed in Attachment I, Maps and Project Plan.

The Chippy Creek Fire burned intensely through the north half of the section leaving virtually no live vegetation and high mortality in all strata (See Attachment I, "Intense Fire Activity" Map). The fire burned less intensely in the southern half of the section with evidence of individual and group torching. There are some large-diameter ponderosa pine (*Pinus ponderosa)* and western larch (*Larix occidentalis)* which may survive the effects of the fire. See Attachment IV, Harvest Prescriptions, for more detailed descriptions of current vegetative conditions. Although many trees have green crowns, the boles are scorched an average of 30 – 35 feet, killing the cambium layer and making the tree susceptible to insect infestation. Both the overstory and understory Douglas-fir *(Pseudotsuga menziesii)* is heavily infested with Dwarf mistletoe, (*Arceuthobium douglasii)* and much of the western larch is infected with Dwarf mistletoe *(Arceuthobium laricis).*

In the pre-fire condition, the primary insect and disease agents in the stands were widespread infestations of: Dwarf mistletoe in the Douglas-fir and western larch, mountain pine beetle *(Dendroctonus ponderosae)* in the ponderosa pine and lodgepole pine, Douglas-fir beetle (*Dendroctonus pseudotsugae*) in the Douglas-fir, and Indian paint fungus *(Echinodontium*

tinctorium) in the grand fir *(Abies gradis).* Post-fire these insects plus the Red turpentine beetle *(Dendroctunus valens)* are active in the fire-stressed and dead trees throughout the burned area.

Noxious weeds, mainly knapweed *(Centaurea spp.)* are present in the parcel, most prevalent along open roads.

Direct and Indirect Effects

No Action Alternative
Under the No Action Alternative, no timber harvest or associated activities would occur. The opportunity to contribute revenue to the Common School Trust Fund by salvaging recently fire-killed timber would be lost.
The opportunity to improve stand health and productivity would also be lost. Insects and disease would likely increase due to the susceptibility of fire-stressed trees.
Stand regeneration would occur over time more densely in some areas than others depending on seed source availability. Ponderosa pine and western larch would likely be underrepresented in a natural regeneration situation, as lodgepole pine would likely propagate more quickly and densely.
Noxious weeds would continue to exist along the roads and likely would advance into the forested areas as the fire has provided ample seedbeds.

Action Alternative
Under the Action Alternative, recently fire-killed timber would be salvage harvested from approximately 572 acres on the Mill Pocket parcel. Dominant and co-dominant ponderosa pine and disease free western larch with good crowns and vigor that have survived the fire would be left to provide a native seed source to the newly exposed seed bed. A minimum of two snags per acre 21" DBH and greater, and two snag recruits per acre, where present, would be retained. Seed tree survival and natural regeneration success would be assessed within 3-5 years. Ponderosa pine and western larch, would be planted as needed to achieve desired species diversity. More detailed information for treatment by individual units can be obtained in Attachment IV, Harvest Prescriptions.
Noxious weeds may increase in canopy openings and would be monitored and addressed through an integrated pest management plan including chemical and biological control methods. Roads and skid trail approaches would be seeded and spot treated with chemicals following construction and project completion. Prior to entering the site, off-road logging equipment would be cleaned and inspected through the timber sale contact to avoid seed migration. Roads would be closed following the sale to avoid migration of weed seed into the area. Post-harvest, the area would be included in the Plains Unit's integrated weed management program.

Cumulative Effects
No Action Alternative
Across the Plains Unit the Chippy Creek Fire produced a stand replacement effect on the burned area, moving the vegetation towards an earlier successional stage. Under this alternative this parcel will eventually regenerate naturally. In the future this parcel would likely be dominated by a dense stand of even-aged, seral species such as lodgepole pine, depending on seed availability. According to Losensky (1997), historically in western Montana underburn fires would occur on a 50 year cycle on gentle terrain, a mixed severity fire burned on a 60 - 125 year cycle and a stand replacement fire, such as the Chippy Creek Fire, would occur between 150 – 360 years. The sequence would start with a stand replacement event followed by regrowth of a dense new stand of lodgepole pine. Fuel loading and down woody debris would be expected to increase as dead and dying trees fall. Mortality within the burned area and adjacent stands would likely increase from the effects of insects and diseases.

Action Alternative
Across the Plains Unit, the Chippy Creek Fire produced a stand replacement effect on the burned area, moving the vegetation towards an earlier successional stage. The project area would be altered with regard to overall size class distribution and stocking levels of residual trees. The Chippy Creek Fire has provided the scarification to encourage natural regeneration. Seed tree survival and natural regeneration success would be assessed within 3-5 years. Ponderosa pine and western larch would be planted as needed to achieve desired stocking level and species diversity. The stands would be evaluated for possible pre-commercial thinning opportunities as the stands progresses in age. Approximately 4 acres would be removed from timber production to create road access into the sale area.
More detailed information for treatment by individual units can be obtained in Attachment IV, Harvest Prescriptions.

WILDLIFE ANALYSIS

INTRODUCTION

The analysis in this section pertains to wildlife species and their habitat in the existing environment and foreseen changes to the environment due to each alternative (Action vs. No Action). During the initial scoping, no issues were identified by the public regarding wildlife impacts. Several issues were expressed from internal discussions regarding the potential effects of the proposed timber harvesting, and these will be identified under each species discussed.

Description of Alternatives

No Action Alternative
No timber harvest or associated activities would occur under this alternative.

Action Alternative
Timber would be harvested from 572 acres, retaining snags, snag recruits, and coarse woody debris pursuant to ARM 36.11.411 and 36.411.414. Road reconstruction would be necessary on 1.7 miles of road and 0.78 miles of new road would need to be constructed.

METHODS

DNRC promotes biodiversity by taking a "coarse-filter" approach to wildlife habitat management, favoring an appropriate mix of stand structures and compositions on State lands (ARM 36.11.404). Appropriate stand structures are based on ecological characteristics (e.g. land type, habitat type, disturbance regime, unique characteristics). A coarse-filter approach assumes that if landscape patterns and processes are maintained similar to those with which wildlife evolved, then the full complement of species will persist and biodiversity will be maintained. The coarse-filter approach supports diverse wildlife populations by managing for a variety of forest structures and compositions that approximate historic conditions across the landscape.

Because some species have specialized needs, DNRC also employs a "fine filter" approach for threatened, endangered, and sensitive species (TES species), focusing on these species' specific habitat requirements (ARM 36.11.406). These species are sensitive to human activities, have special habitat requirements that might be altered by timber management, or currently are or might become listed under the Federal Endangered Species Act. Because TES species usually have specific habitat requirements, consideration of their needs serves as a useful "fine filter" for ensuring that the primary goal of maintaining healthy and diverse forests is met.

To assess the existing condition of the project area and the surrounding landscape, a variety of techniques were used. Data to assist in evaluations were obtained from a field visit (Oct 19), scientific literature research, DNRC's Stand Level Inventory (SLI) data, MT Natural Heritage Program data, aerial photographs, consultations with other wildlife professionals, and professional judgment. To assess effects to wildlife species, existing habitat was defined, and then the changes to habitat quality and quantity resulting from each alternative was discussed.

The proposed alternatives were analyzed at two spatial scales. The first scale, used to assess direct and indirect effects, occurred at the project level-- Section 36, T24N, R25W. The second scale of analysis was intended to relate the project-level analysis to the surrounding landscape in order to assess cumulative effects of each alternative on a larger spatial scale. The cumulative effects analysis scale varied according to the species being discussed, but generally encompassed the watersheds in which the project area lies, or the area that would be available to one or more breeding pairs of individuals, given their movement capabilities. In the cumulative effects analysis area, all prior actions on all ownerships were considered in the current condition, and the effects of this project and foreseeable future DNRC actions were considered and discussed.

COARSE FILTER ANALYSIS—

Issue: There are concerns that harvesting dead and dying trees may disturb and/or physically alter habitat for wildlife, which may adversely affect some species.

Existing Environment:

The project areas consists of one section of DNRC managed land located in the Mill Creek area, approximately 13 air miles north of Hot Springs, MT. Elevations on the section range from 4280 to 5080 feet. Surrounding lands in the area are managed by the Confederated Salish and Kootenai Tribes, and have been managed in recent decades as a primitive area in which timber harvesting and other human activities have been minimal.

All of the acres in the project area were burned in the Chippy Creek Fire at moderate to high intensities. Thus, the project area is now at the earliest of seral stages. Throughout the burned portions of this project area, as well as the entire Chippy Creek Fire area (>99,000 acres total), snag densities are very high and overstory canopy cover and understory vegetation are reduced to minimums. As a result of the fire, the project area has been dramatically altered from its previous condition. For wildlife species that are associated with dense forest canopies and/or understories, habitat quality and quantity in the project area have been dramatically altered and are no longer suitable. Conversely, new habitat has been created for species that use post-fire and/or more open habitats.

Direct, Indirect, and Cumulative Effects of No Action Alternative:

This alternative would retain all the dead wood (snags and downed wood) that resulted from the fire. This material would provide foraging and nesting sites for a host of cavity nesting species. Through time, species use of the area would change based on the development of understory and overstory tree species. The dead wood created by the fire would remain standing as snags or fall to the ground and provide habitat for a variety of mammal, bird, reptile, and amphibian species.

Other land owners within the fire perimeter include: Flathead Agency (~32,000 acres), Lolo National Forest (~47,000 acres), and private landowners (~17,000 acres, much of which is owned by private industrial timber companies). Salvage harvests are expected to occur on most if not all of the private industrial timber lands and on much of the Tribal lands, and perhaps on some of the Forest Service lands within the fire area. However, much of the burned acreage (approx. 50%) will likely remain unsalvaged, continuing to provide considerable amounts of habitat for fire-associated wildlife species. Under the No Action Alternative, DNRC would not contribute additional acres the amount of forest salvaged in the Chippy Creek Fire area, beyond the 1,120 acres that will be harvested across five sections on the western edge of the fire (Cook Mountain E.A., Nov. 2007). Thus for this project, no direct, indirect, and cumulative effects would be expected under the No-Action alternative.

Direct, Indirect, and Cumulative Effects of Action Alternative:

Under this alternative, a majority of the timber would be removed from the proposed units in the project area (~572 acres). Effects to wildlife habitat would result from the removal of snags from much of the area, reducing habitat structure in the units. Mitigation measures that are discussed further in this analysis, including snag retention and retention of unharvested areas,

would help to ensure that some snags and downed woody material would be available for a variety species to use both in the shorter term and as the stands regenerate. The removal of dead wood from the project area is expected to reduce habitat for some species that are relatively abundant in severely burned forest patches, resulting in minimal direct and indirect effects to such species.

Acres harvested under the Action alternative would be in addition to 1120 acres of burned forest on DNRC lands that would be harvested on the western edge of the fire area (see Cook Mountain EA, Nov 2007). The DNRC would add to the large number of acres that are expected to be salvaged logged on much of the Tribal and private timber company lands. However, much of the total fire area (at least 50%, or 45,000 acres) will remain unsalvaged, continuing to provide considerable amounts of habitat for fire-associated wildlife species. Because of the small amount of acreage the DNRC proposes to harvest, the cumulative effects of the proposed salvage on species that utilize burned habitats would be minimal.

FINE FILTER ANALYSIS--

The Northwest Land Office considers 1 endangered and 2 threatened species, as well as 12 sensitive species when evaluating the effects of proposed actions on wildlife resources. Three of these species, plus big game, are discussed in depth in this analysis, as adequate habitat for these species exists within the project area and thus the proposed Alternatives could have direct, indirect, or cumulative effects to these species. The remaining threatened, endangered, and sensitive species were excluded from analysis, under the justification provided in Table W-1.

A search of the Montana Natural Heritage Program Database was conducted, which documented no occurrence records in the proposed project area or within a 4 mile radius of any of the proposed harvest sections for species that the DNRC considers “sensitive.” However, their data did note that the Cabinet, Salish, and Purcell mountain ranges have relatively continuous habitat for wolverines (considered sensitive by the USFS), and that there have been observations and harvests of wolverines in these mountain ranges over the past several decades. Because wolverines are a wide-ranging species, and because the proposed salvage harvest would take place in less than ideal habitat for wolverines, no direct, indirect, or cumulative effects would be expected under either Alternative.

Table W-1. Endangered (E), threatened (T) and sensitive (S) species that were not considered in the wildlife effects analysis for the proposed alternatives on the Mill Pocket Salvage.

Species	Determination & Basis
Gray Wolf (E)	The project area is outside of the documented home ranges and usage areas for the nearest wolf packs (Thompson Peak pack to the west and Salish pack to the NE). Wolves may use the project area to a small degree, but denning and/or rendezvous sites are not expected in the project area. Additionally, the proposed action is not expected to result in measurable effects to big game species. Standard contract language specifies that fire arms are not to be carried by contractors. DNRC biologist will consult with FWP biologist in Spring 2008 to ensure no dens are rendezvous sites are within the vicinity. Thus, any direct, indirect, or cumulative effects to wolves would be negligible.
Canada Lynx (T)	The proposed project area and surrounding areas consist of drier forest types at lower elevations with relatively open understories-- habitats not typically used by lynx. Thus, any direct, indirect, or cumulative effects to lynx would be negligible.
Grizzly Bear (T)	No further analysis conducted— The proposed project area is >16 miles east of the Cabinet/Yaak Recovery Zone and >23 miles west of the NCDE (USFWS 1993), and is outside of occupied habitat (Wittinger 2002). Project activities are not expected to substantially alter habitat from its existing condition such that grizzlies would not be able to use it in the future if the area were to become inhabited. Thus, any direct, indirect, or cumulative effects to grizzly bears would be negligible.
Bald eagle (S)	Project area lies nearly 6 miles from the nearest known eagle nest (on the Upper Dry Fork Reservoir), is outside of the home range, and is >1mi from open water. Haul routes would not travel near any known eagle nests. Thus no direct, indirect, or cumulative effects to eagles would be expected.
Coeur d'Alene salamander (S)	No moist talus or streamside talus habitat occurs in the project area. Thus, no direct, indirect, or cumulative effects to Couer d'Alene salamanders would be expected.
Columbian sharp-tailed grouse (S)	No suitable grassland communities occur in the project area. Thus, no direct, indirect, or cumulative effects to Columbian sharp-tailed grouse would be expected.
Common loon (S)	No suitable lake habitats occur within the project area. Thus, no direct, indirect, or cumulative effects to Common loons would be expected.
Fisher (S)	Any potential upland habitat for fishers was affected by the fire; stands with suitable canopy cover and structural diversity for fishers are not expected to occur in the project area for several decades as the area regenerates. There are no Class I or II streams in the project area through which future travel or habitat use would be affected by the proposed salvage activities. Thus, any direct, indirect, or cumulative effects to fishers would be negligible.
Harlequin duck (S)	No suitable high-gradient stream or river habitats occur in the project area. Thus, no direct, indirect, or cumulative effects to Harelequin ducks would be expected.
Northern bog lemming (S)	No suitable sphagnum bogs or fens occur in the project area. Thus, no direct, indirect, or cumulative effects to Northern bog lemming would be expected.
Peregrine falcon (S)	No suitable cliffs/rock outcrops occur in the project area. Thus, no direct, indirect, or cumulative effects to peregrine falcons would be expected.
Townsend's big-eared bat (S)	No further analysis conducted—No suitable caves or mine tunnels occur in the project area. Thus, no direct, indirect, or cumulative effects to Townsend's big-eared bat would be expected.

- **Black-backed Woodpeckers (*Picoides arcticus*)**

Issue: Timber harvesting in recently burned areas can affect black-backed woodpeckers by reducing nesting and/or foraging habitats.

Existing Environment:

The black-backed woodpecker uses recently burned forest stands for foraging and nesting. They are primary cavity-nesters that usually prefer 10-16" dbh snags in which to excavate nest cavities. Douglas-fir, western larch, and ponderosa pine are preferred species for nesting. Subalpine fir, grand fir, and Englemann spruce are used approximately in relation to their abundance, while lodgepole pine is avoided (Hejl and McFadzen 1998). Black-backed woodpeckers forage primarily on charred portions of moderately to heavily burned conifers. They feed almost exclusively by excavating larval wood-boring beetles that invade burned stands shortly after a moderate- to intense-severity fire. Additionally, insect outbreaks in unburned stands also might provide foraging opportunities. On average, black-backed woodpeckers forage on trees larger than 12" dbh relatively more than their availability (Hejl and McFadzen 1998).

At the project level, the entire section (628 acres) was burned in the Chippy Creek Fire, with approximately half of the acres burned at moderate intensity and half at a high intensity. The majority of the burned area meets the definition of black-backed woodpecker habitat (e.g. >40 trees/acre that are ≥9" dbh) defined in ARM 36.11.403(12). Direct and indirect effects were anlalyzed across the 628 acre project area; cumulative effects were evaluated across all lands affected by the Chippy Creek Fire.

Direct, Indirect, and Cumulative Effects of the No Action Alternative:

Under the No-Action Alternative, none of the 628 acres in the Mill Pocket section would be harvested by DNRC. Black-backed woodpeckers would be expected to use the burned area heavily for at least 4 years and up to 8 years following the fire (Kotliar et al. 2002). Salvage harvests are planned on neighboring sections of Tribal land, which could create disturbances to birds using the DNRC section. Illegal firewood gathering could occur in this section, as open road densities are high and there has been a history of trespass, which could remove some of the standing dead trees that could be used for foraging or nesting.

Across the Chippy Creek Fire, salvage harvests are expected to occur on most of the private industrial timber lands and Tribal lands affected by the fire (~15% and ~30% of the fire area, respectively). National Forest lands, which make up ~50% of the fire area, may be salvaged to a small degree. Thus, as much as 50% of the Chippy Creek Fire area could be salvaged logged, though that would still leave approximately 50,000 acres of burned forest (in varying degrees of burn severity). DNRC lands (approx. 2% of the fire area), would not contribute to the amount of lands affected by the salvage activities. Thus, under this alternative, negligible direct, indirect, or cumulative effects to black-backed woodpeckers would be expected.

Effects of the Action Alternative:

Under the Action Alternative, 572 acres of burned, suitable black-backed woodpecker habitat would be harvested. This Alternative is expected to decrease the amount and/or quality of foraging and nesting habitats in the project area, resulting in the potential for a decrease in the number of reproductive pairs in the project area. Research recommends leaving some large patches of untouched burned forest to provide foraging habitat (Hutto 1995), which is consistent with the standard mandated by ARM 36.11.438(b) in which DNRC shall manage approximately 10% of the burned area in an unharvested condition. Under this Alternative, 56 acres of burned forest (9%) in the project area would be deferred from harvest (see Figure W-1), in addition to unharvested areas within 25 ft of the SMZs. In addition, 150 acres of black-backed woodpecker habitat in the Little Bitterroot parcel (Section 16, 24N, R24W) would be deferred from harvest for at least five years and would serve as additional black-backed woodpecker habitat.

To off-set the potential loss of value of ponderosa pine trees to blue-staining, an Alternative Practice (see Attachment III, Alternative Practices to the State Forest Land Management Rules) would allow harvesting and associated activities to occur in the project area during the nesting season (April 15- July 1). Efforts would be made, through contract language

and sale administration, to have contractors complete the road construction and start logging near the leave patches as soon as possible, in an effort to minimize any disturbance near those leave patches during nesting season (April 15- July 1). Harvesting activities should have started at least a month prior to the onset of the nesting season, so much of this acreage will have already been harvested and thus no longer be appropriate habitat for birds to select for nesting. Furthermore, because harvesting is expected to take place on neighboring sections prior to the nesting season, the general area will most likely not be appealing habitat for black-backed woodpeckers. Thus, there is a slight risk of direct effects to a small number of nesting pairs of black-backed woodpeckers in the remaining portions of sale units that would be harvested during the nesting period, and indirect effects to black-backed woodpeckers resulting from the eventual loss of 572 acres of foraging habitat.

The impacts of the proposed DNRC harvest would result in <2% of the fire area being harvested. Although extensive salvage harvesting is expected to occur on much of the private timber company and tribal lands within the fire area, the majority of the Forest Service lands affected by the fire (~47,000 acres) will remain unharvested (D. Wrobleski, Lolo National Forest, pers. comm. Sept. 2007). According to Samson (2006), this represents enough habitat to support a viable population of black-backed woodpeckers. Combined with the expected salvaging on other ownerships, the DNRC's actions would add to the loss of black-backed woodpecker foraging and nesting habitat within the area affected by the Chippy Creek Fire. However, due to the sizable area burned in the Chippy Creek wildfire, including many areas not likely to receive salvage harvest, the overall cumulative impact of the proposed harvest on black-backed woodpecker habitat would be minimal.

Mitigations for Black-backed Woodpeckers:

- *Retain at least 56 acres of the project area in an unharvested condition to provide reserved black-backed woodpecker foraging and nesting habitat; defer harvest of burned forest on the Little Bitterroot parcel (Section 16, 24N, R24W) to provide additional black-backed woodpecker habitat*
- *Make efforts to have contractors complete the road construction and start logging near the leave patches as soon as possible, in an effort to minimize any disturbance near those leave patches once the nesting season commences (April 15- July 1)*

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➢ **Flammulated Owl (*Otus flammeolus*)**

Issue: Timber management practices that would reduce the availability of mature ponderosa pine or cavity producing trees (snags) may reduce flammulated owl habitat.

Existing Environment:

Flammulated owls are small, migratory, insectivorous forest owls that inhabit old, open stands of warm-dry ponderosa pine and cool-dry Douglas-fir forests in the western United States. These owls are secondary cavity nesters, usually nesting in cavities excavated by pileated woodpeckers or northern flickers in large aspen, ponderosa pine, or Douglas-fir trees or snags. Nesting typically occurs in stands with moderate canopy closure (30-50%) with at least 2 canopy layers (MCallum 1994). Flammulated owls feed on moths and other insects, and thus need fairly open forests in which to forage. Periodic underburns may contribute to increasing habitat suitability for flammulated owls because low intensity fires would reduce understory density of seedlings and saplings, while periodically stimulating shrub growth.

Before the fire, much of the proposed project area consisted of the dry ponderosa pine/western larch cover types that flammulated owls prefer, though Douglas-fir encroachment most likely lowered the habitat quality. Post-fire, sizeable snags (>15") occur throughout the project area at relatively high densities. However, the fire reduced canopy cover, thus making the area relatively unsuitable for flammulated owls in the short term (e.g. next 50 years or so), until the stands regenerate enough to provide moderate canopy cover.

Direct and indirect effects of salvage harvesting were considered at the scale of the project area. Cumulative effects were analyzed within an expanded area containing the Mill

Creek and Mill Pocket watersheds, from their headwaters to their confluence with the Little Bitterroot River (see Figure W-2). Most of the cumulative effects analysis area consists of the dry forest types that flammulated owls prefer. While nearly all of the analysis area was affected by the Chippy Creek Fire, burn intensities varied. Much of the lower elevations (eastern portions of the analysis area) burned at low to moderate intensities, in which the understory vegetation was thinned, making for excellent flammulated owl habitat. In the higher elevations, the fire burned more intensely, thus much of those areas may not be appropriate habitat for flammulated owls for the next several decades until the canopy re-develops and closes in. However, flammulated owls are associated with fire-adapted tree species, and thus the burned areas are expected to regenerate into good conditions for flammulated owls in the future.

Direct, Indirect, and Cumulative Effects of the No Action Alternative:

Under this Alternative, no trees would be harvested and thus all snags would be left in the project area to become potential nest trees once the forest regenerates. Many of the snags would likely fall or be illegally harvested for firewood prior to forest regeneration, but suitable nesting habitat would most likely be abundant once the forest regenerated. Throughout the cumulative effects area, many of the potential future nesting trees would be removed through salvage logging. However, areas in which snags are retained or where harvesting does not occur will augment the remaining amount of habitat available for flammulated owls. Thus, this alternative would likely have minimal risk of direct, indirect, or cumulative effects to flammulated owls.

Direct, Indirect, and Cumulative Effects of the Action Alternative:

The proposed harvest would remove many of the dead trees in the project area. However, large snags and snag replacement trees would be retained (average of at least 2 snags and 2 snag recruits >21" dbh (or the next largest size available) per acre of harvested land (or additional snags if snag recruits are not available; ARM 36.11.411), with favor given to ponderosa pine, larch, and larger Douglas-fir trees, all of which can make good nest trees for flammulated owls. As stands regenerate and the canopy closes, the remaining snags and snag recruits should provide excellent nesting and perching opportunities it the future (approx. 50 years). Thus direct and indirect effects to flammulated owls would be minimal.

The effects to flammulated owls due to DNRC harvest would be additive to the effects of salvage harvest activities planned on Tribal lands. However, appropriate flammulated owl habitat still exists in the cumulative effects analysis area on some of the unburned (~6% of the effects area) and low-intensity burn areas (roughly 15% of the effects area). Because the effects of the timber salvage would remove potential future nest trees from only a small percentage of the analysis area, and snags would be left to provide future habitat, cumulative effects of salvage harvest should be minimal.

Mitigations for Flammulated owls:

- *Follow snag retention protocols set by ARM 36.11.411, retaining an average of at least 2 snags and 2 snag recruits >21" dbh (or the next largest size available) per acre of harvested land (or additional snags if snag recruits are not available)*
- *Favor ponderosa and larch, then Douglas-fir snags; favor clumping snags where possible, and retaining snags >200 yards from open roads*
- *Retain occasional dense patches of conifer regeneration and shrubs if available.*

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➢ **Pileated Woodpecker (*Dryocopus pileatus*)**

Issue: Timber harvesting and related activities may reduce the quality and quantity of pileated woodpecker nesting and foraging habitat.

Existing Environment:

Pileated woodpeckers are closely associated with mature and late successional forest communities at low to mid elevations. The pileated woodpecker plays an important ecological role by excavating cavities that are used in subsequent years by many other species of birds and mammals. Preferred nest trees for pileated woodpeckers are western larch, ponderosa pine, black cottonwood, and quaking aspen, usually 20 inches dbh and larger. Pileated woodpeckers primarily eat carpenter ants and other insects, which inhabit large downed logs, stumps and snags. Nesting habitat consists of mature stands below 5,000 feet in elevation that are 50-100 contiguous acres in size, with 100-125 square feet per acre of basal area and a relatively closed canopy (Aney and McClelland 1985).

Potential pileated woodpecker nesting habitat existed in the proposed project area before the fire. However, all of these acres were affected by the burn, which essentially turned those areas into non-nesting habitat by removing the closed canopy. Some foraging opportunities are probably available in the burned areas for pileated woodpeckers. Due to the larges distances to suitable unburned pileated woodpecker habitat, however, use of the project area is expected to be minimal until the stands regenerate a closed canopy.

Direct and indirect effects were analyzed and described at the project level. Cumulative effects were analyzed within an expanded area containing the Mill Creek and Mill Pocket watersheds, from their headwaters to their confluence with the Little Bitterroot River (see Figure W-2). Within the cumulative effects area, a majority of the habitat was burned, and the unburned lands are mostly grasslands which are not appropriate for pileated woodpeckers. Thus any pileated woodpeckers that would be expected in the cumulative effects area would most likely nest in unburned forests to the north or south of the fire perimeter, >3 miles from the project area.

Direct, Indirect, and Cumulative Effects of the No Action Alternative:

This Alternative would retain all live trees and the snags produced by the fire. Thus no effects to pileated foraging habitat would be expected. Pileated woodpeckers are not expected to use the burned area extensively, though some foraging use might occur in burned areas over time.

All potential pileated woodpecker foraging habitat on DNRC lands in the cumulative effects area would be retained under this Alternative. The effects of the fire, however, severely reduced the amount of pileated nesting habitat in the cumulative effects analysis area. Thus, the majority of the analysis area is not expected to support a substantial population of pileated woodpeckers over the next several decades, until forests begin to regenerate and the canopy closes once again. Thus, no direct, indirect, or cumulative effects to pileated woodpeckers due to DNRC actions would be expected.

Direct, Indirect, and Cumulative Effects of the Action Alternative:

Harvest would decrease snags, making for less potential foraging habitat in the short-term. However, in compliance with ARM 36.11.411, this alternative would retain an average of at least 2 snags and 2 snag recruits >21" dbh (or the next largest size available) per acre of harvested land (or additional snags if snag recruits are not available). As the stands regenerate and overstory canopy becomes closed again (50+ years), the snags retained in the proposed harvest units will either remain standing and be good nest trees or they will have fallen making coarse woody debris for foraging. Given that pileated woodpecker use of the project area is expected to be minimal over the next several decades and that snags and snag recruits would be left on the project area, direct and indirect effects to pileated woodpeckers would be minimal under this Alternative.

Harvest on DNRC lands within the analysis area would further reduce the amount of foraging and future nesting habitat in the cumulative effects analysis area. The salvage harvest of 572 acres of DNRC land in addition to the proposed acres harvested on Tribal lands would amount to a large portion of the cumulative effects area being affected, with DNRC accounting for a small portion of that area. Given habitat was greatly compromised by the effects of the Chippy Creek wildfire, and that some snags and coarse woody debris would be retained in all harvest units, the cumulative effects associated with this Alternative are not expected to substantially affect pileated woodpeckers in the cumulative effects analysis area.

Mitigations for Pileated Woodpeckers:

- *Follow snag retention protocols set by ARM 36.11.411, retaining an average of at least 2 snags and 2 snag recruits >21" dbh (or the next largest size available) per acre of harvested land (or additional snags if snag recruits are not available)*
- *Favor ponderosa and larch, then Douglas-fir snags; favor clumping snags where possible, and retaining snags >200 yards from open roads*
- *Retain coarse woody debris where applicable (to provide foraging opportunities)*

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- **Big Game**

Issue: Timber harvesting and related activities can affect big game wintering habitat and security.

Existing Environment:

Hiding cover, security, and winter range are the primary aspects of big game habitat that can be affected by timber harvesting and associated activities. As visibility and accessibility increase within forested landscape, elk and deer have a greater probability of being observed and, subsequently, harvested by hunters. Increased road densities improve hunter accessibility, thus decreasing security for elk and other game species (Hillis et al. 1991). Characteristics of habitats that make them suitable for buffering the effects of severe winter conditions include having adequate midstory and overstory to reduce wind velocity and moderate ambient temperatures. Besides providing a moderated climate, the snow-intercept capacity effectively lowers snow depths, which enables big game movement and access to forage.

Within the project area, existing road densities are fairly high, with just over 4 mi/mi^2. Thus there is no elk security habitat available on this section (Hillis et al. 1991). The fire essentially removed a good majority of the hiding cover by burning most or all of the smaller-diameter trees and shrubs, as well as some of the larger trees. As a result, sight distances within the section are greatest in the high-intensity burn areas and are still quite long in the moderate-intensity burn areas. The section is not typically used as winter range, as the elevations are higher and few southerly aspects exist. However, whitetail deer and elk are known to use the area in other seasons.

The proposed project area lies within the boundaries of the Flathead Indian Reservation, where big game species are managed by Confederated Salish & Kootenai biologists. In their Chippy Salvage Sale Environmental Analysis (2007), tribal biologists defined a cumulative effects analysis area that includes all sections of CS&KT lands that were affected by the Chippy Creek Fire. For this analysis, we used the same area, with the inclusion of the acres of DNRC land that were also affected by the fire (total of ~35,898 acres). Road densities are high within the cumulative effects analysis area (approx. 7mi/mi^2), making elk security virtually non-existent. Within the cumulative effects analysis area, approximately 24% burned at a high intensity, 22% at moderate intensity, 23% at low intensity, and 31% was unburned or burned at a very low intensity. Hiding cover and thermal cover will be lacking in the nearly 46% of the area that burned at moderate to high intensities until canopy and understory cover regenerate, but the remaining acres should provide adequate cover for big game.

Direct, Indirect, and Cumulative Effects of the No Action Alternative:

Under this alternative, timber salvage would not occur on the project area and no new road construction would occur in the project area. Open and total road density would not change under this alternative; however, there would likely be a gradual change in sight distance from open roads with burned snags falling over and/or being illegally taken for firewood. This increase in sight distance would be temporary until natural regeneration colonizes the affected sites and provides visual screening cover. The Chippy Salvage Sale on tribal lands would harvest approximately 11,000 acres within the cumulative effects area, but the DNRC would not add to the acres salvaged. Thus there would be low risk of direct, indirect, and cumulative effects to big game as a result of this alternative.

Direct, Indirect, and Cumulative Effects of the Action Alternative:

Under this alternative, open road densities would increase in the project area with the construction of 0.86 miles of new road and the reconstruction of another 1.38 miles of old roads. The net result would be an increase in total road densities from 4.08 to 4.94 miles in the project area. The proposed timber salvage would increase sight distances by removing tree boles; the effects would be most noticeable in the moderately burned acres, as the high intensity burn areas are already very open. Thus sight distances would increase on the harvested 572 acres temporarily, until vegetation regenerates over the next two decades to a degree that would provide adequate hiding cover for big game. Because little forage or cover exists on the project area, elk and other big game are not expected to use this area much during this winter, but the regrowth of browse in summer 2008 and afterwards should provide a benefit to big game. The removal of fire-killed timber may prove beneficial by reducing impediments to travel by big game. Winter range would not be affected by this Alternative.

Across the cumulative effects analysis area, salvaging is expected to occur on approx. 11,000 acres of tribal land, or 30.6% of the cumulative effects analysis area, mostly in moderate to severely burned areas in which the current value to big game is minimal. The DNRC would add 572 acres of impact; thus 32.2 % of the cumulative effects area would see a slight decrease in sight distances and a slight increase in road densities. Compared with the effects of the fire, the proposed Action Alternative would have minimal direct, indirect, or cumulative effects to big game.

Mitigations for Big Game:

- *Retain dense patches of conifer regeneration and shrubs where available and practicable.*
- *Where applicable, close roads and skid trails opened with the proposed activities to reduce the potential for motor vehicle use.*

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Figure W-1. Burned forest deferred from harvest for at least 5 years to provide habitat for black-backed woodpeckers.

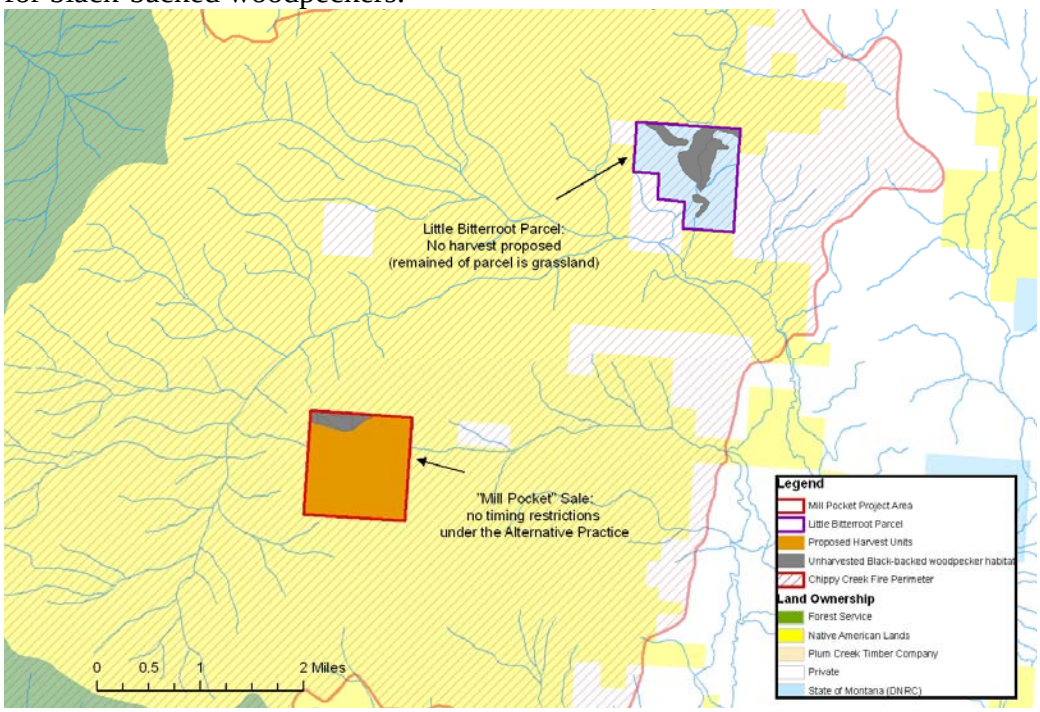
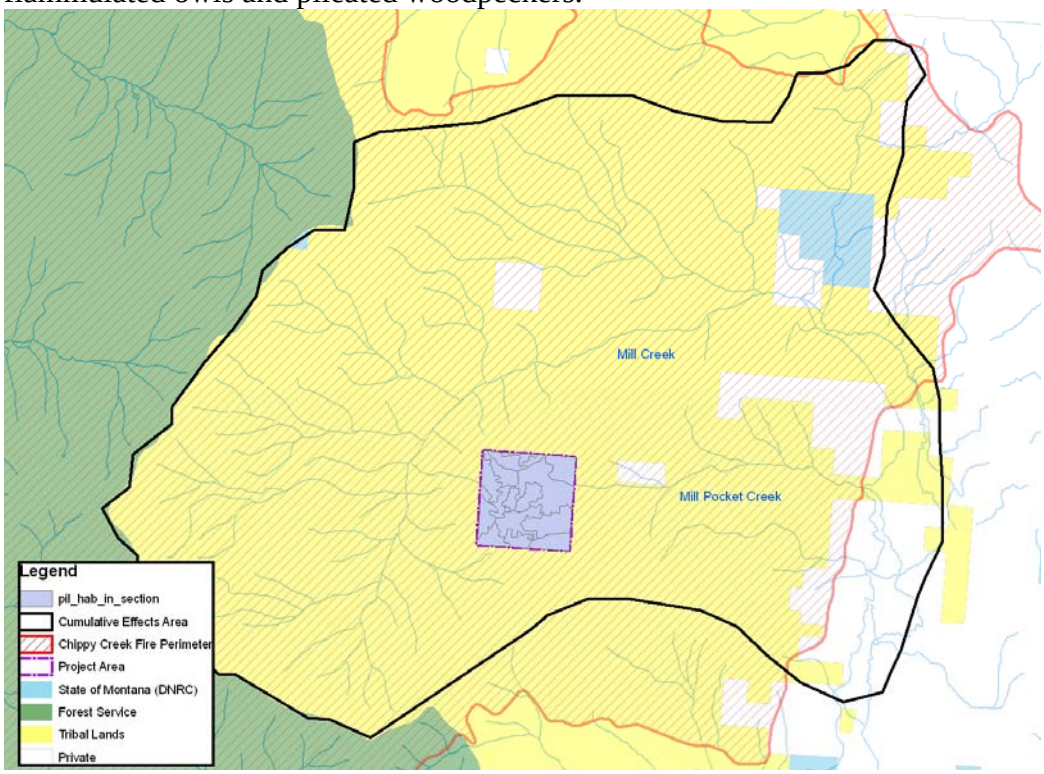


Figure W-2. Cumulative effects analysis area used for analyzing effects of alternatives to flammulated owls and pileated woodpeckers.



SOILS ANALYSIS

Introduction
This analysis is designed to disclose the existing condition of the soil resources and display the anticipated effects to soils resources that may result from each alternative of this proposal. During the initial scoping, no issues were identified by the public regarding soil impacts. The following issue statement was expressed from internal discussions regarding the potential effects of the proposed timber harvesting:

- Timber harvest activities may result in reduced soil productivity and increased erosion due to compaction and displacement, depending on area and degree of harvest effects.

Analysis Area
The analysis area for soil impacts will be the proposed harvest units. This analysis area will adequately allow for disclosure of existing conditions, direct, indirect and cumulative impacts. .

Analysis Methods
Methods for disclosing impacts include using general soil descriptions and the management implications for each landtype (*landtype* refers to a unit of land with similar designated soil, vegetation, geology, topography, climate and drainage). In addition, a general description of the past impacts—including the Chippy Creek Fire—will assist in locating areas sensitive to impacts from erosion, compaction and displacement. Finally, this analysis will qualitatively assess the risk of negative effects to soils from erosion, compaction and displacement from each alternative using insight from previously collected soils monitoring data from over 70 DNRC post harvest monitoring projects.

While the anticipated impacts from each alternative will disclose the direct/indirect effects, the cumulative impacts will be the result of previous and proposed activities.

EXISTING CONDITIONS
General Conditions
The *Soil Survey of Sanders and Parts of Lincoln and Flathead Counties, Montana* (NRCS, 1996) describes some of the soil features that affect the management of soils in the project area. The information provided in this publication also assists in predicting soil behavior in response to management actions

The Plains Unit is dominated by partially metamorphic, sedimentary rocks from the 600-million year old Belt Supergroup. The PreCambrian rocks in this area are generally comprised of argillites, quartzites and siltites. These rock types generally tend to be stable with a low erosion potential although slope steepness and fine material characteristics may increase the erodibility. Overlying these sediments is a layer of loess influenced volcanic ash deposited from Mount Mazama

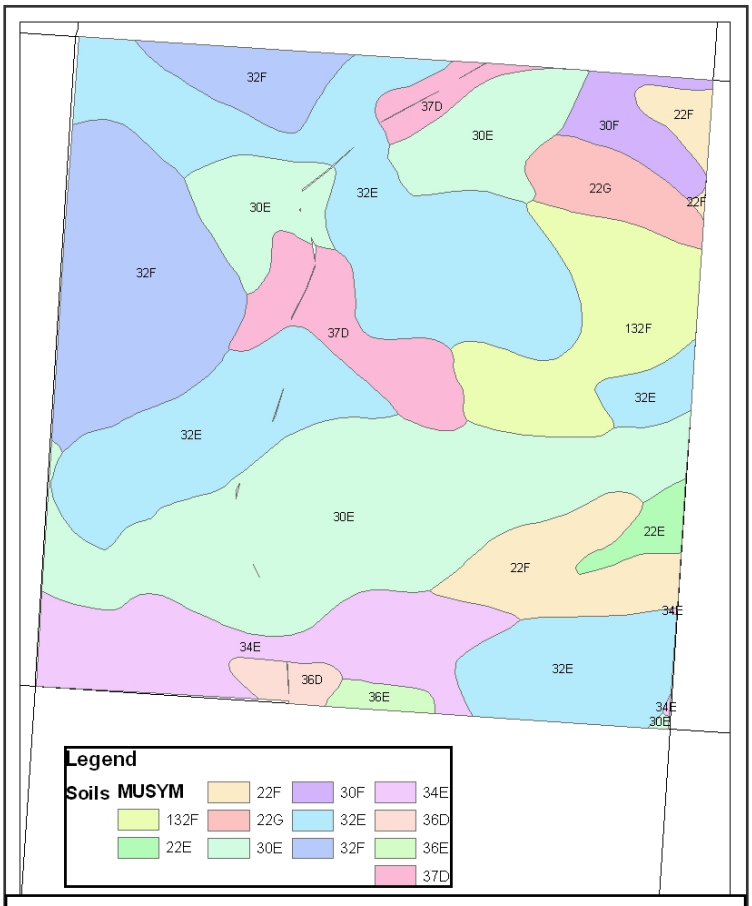


Figure SF-1: Project Area Soil Map

approximately 6700 years ago. Glacial Lake Missoula lacustrine silts may occur below an elevation of 4,150 feet. The presence of volcanic ash or lacustrine silts may increase the erosion potential depending upon slope, vegetation and surface rock. Throughout the Chippy Creek fire area, there are extensive areas of exposed bedrock and scree material. (Makepeace, 2007).

Several soils were identified in the project area. Table ST-1 provides a brief description of the soils within the project area while Figure SF-1 provides a visual depiction of the soils locations.

Table ST-1: Project Area Landtype Descriptions

Soil Description			Management Implications (erosion hazard)	
Soil Type	Name	Soil & Vegetation Descriptions	K factor**/erosion potential*	Comments
22 E,F,G	Winkler gravelly sandy loam E- 15-35% slopes F- 35-60% slopes G- 40-70% slopes	Somewhat excessively well-drained soils comprised of coarse gravelly and sandy loams. Some localized rock outcrops/rubble fields may occur. Generally, forested with ponderosa pine and Douglas-fir	K=0.15 Erosion potential is moderate to severe depending upon slope.	Operating during frozen or snow-covered conditions can mitigate erosion potential. Steeper slopes should be harvested using cable systems. Long season of operation due to well-drained characteristics.
30 E,F	Tevis gravelly loam E- 15-35% slopes F- 35-60% slopes	Somewhat excessively well-drained soils with isolated areas of rubble. Surface soils are gravely loam with 15-35% rock fragments overlying extremely gravelly loam with 60-85% rock fragments. Generally, forested with ponderosa pine and Douglas-fir.	K=0.20 Erosion potential is moderate to severe depending upon slope.	
32 E,F	Mitten gravelly silt loam E- 15-35% slopes F- 35-60% slopes	Soils are somewhat excessively well-drained. Surface soils are volcanic ash influenced gravelly silt loam with up to 35% rock fragments overlying avery gravely loam soil with u pto 60% rock fragments.	K=0.17 Erosion potential is moderate to severe depending upon slope.	
34E	Winfall, gravelly loam. 15-35% slopes	Soils are well-drained and derived from alpine till and drift. Surface soils on these moraines are gravelly loam with up to 30% pebble content.	K=0.20 Erosion potential is moderate due to the gentle slopes.	
36 D,E & 37D	Rumblecreek gravelly loam D- 4-15% slopes E- 15-35% slopes	Soils are well drained although the permeability is moderately slow. The surface soils on these moraines have a higher clay content then other soils in the project area. Rock fragments make up about 20% of the surface soils and 30 percent of the E horizon.	K=0.20 Erosion potential is slight to moderate due to the gentle slopes.	
132F	Mitten-Tevis complex 35-60% slopes	Soils are somewhat excessively well drained and derived from volcanic ash overlying colluvium. Surface soils are gravely silt loam overlying a coarser subsoil.	K=0.20 Erosion potential is severe due to steeper slopes slope.	

* Erosion Potential is based on slope and soil erosion factor K**. The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50-70 percent of the surface has been exposed by logging, grazing, mining, or other kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion –control measures including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion–control measures are costly and generally impractical. (NRCS, 1996)

**Erosion Factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. (NRCS, 1996)

Fire Impacts

During August 2007, the project area was burned in the Chippy Creek Fire. In general, most areas burned with enough heat intensity to kill most trees, although locations with sparse fuels or near moist environments experienced varied mortality rates by tree species. Although much of the trees were killed in the fire, impacts to soils on DNRC managed lands appear to be less severe. Of the 35,266 acres burned on the Flathead Indian Reservation, 23,000 acres (65%)were estimated to have characteristics of a low burn severity; 4,171 acres (12%) exhibited moderate burn severity effects; and, 8,095 acres (23%) were estimated to have high burn severity impacts. Field reconnaissance confirmed that these estimates reasonably approximate burn severity on the state parcel.

Much of the DNRC managed lands involved in the Chippy Creek Fire exhibited complete duff consumption. 'Duff' is defined as organic matter in various stages of decomposition on the floor of the forest. The removal of duff and other organic material results in a higher erosion potential until vegetation becomes reestablished.

One of the potential effects to soils from fire can be hydrophobic soils. Two types of hydrophobicity may occur:

1) An oven drying effect occurs on volcanic ash soils where surface soil is dried to the point that it is difficult to take on moisture, and
2) A physical alteration of the soil where particles are coated with a waxy film through the burning of organic material. Soil particles may begin to melt to a glassy texture.

High burn severity areas may have developed a modest amount of hydrophobic conditions. This type of water repellency is typically alleviated by light rain and morning dew. To date, several rain showers have fallen on the area and have likely alleviated this condition. No areas of physically altered soils were identified on state lands.

A second result associated with wildland fires is suppression impacts. No control lines were constructed or other fire suppression activities conducted on state land within the project area. Therefore, no impacts have resulted from fire suppression activities.

Past Management
Prior management activities have occurred in the project area, mainly in the 1940-60's. The last large scale harvest in the parcel was conducted in 1948-50, when approximately six million board feet of ponderosa pine and Douglas-fir were removed. Until 1960, Christmas tree harvest occurred on the section.

Cumulative Effects
Cumulative effects from past and current uses on the State parcel are limited to skid trails and roads. Skid trails from the last entry are present throughout the section. Steeper areas have "jammer" trails spaced approximately 200 feet apart while more gentle areas have skid trails spaced an average of 60-70 feet apart. Most draws have a skid trail located in the bottom as was common during operations of the 1940s and 50s. During field reconnaissance, no substantial erosion or sediment delivery locations were noted within the state parcel.

DNRC strives to maintain soil productivity by limiting cumulative soil impacts to 20% or less of a harvest area as noted in the State Forest Management Plan (DNRC, 1996). As a recommended goal, if existing detrimental soil effects exceed 15% of an area, proposed harvest should minimize any additional impacts. Harvest proposals on areas with existing soil impacts in excess of 20% should avoid any additional impacts and include restoration treatments as feasible, base on site-specific evaluation and plans. Past monitoring on DNRC timber sales from 1988 to 2003 has shown an average of 13.5% long-term soil impacts across all parent materials using all methods of harvesting (ground-based/cable yarding) (DNRC, 2004). These impacts range from 3% to 37.8% with a median of 9%. While no data for the monitoring report was collected from this parcel, ocular estimations during field review suggest impacts near or below the average.

While past results do not guarantee future impact levels, DNRC has demonstrated that through site specific requirements and contract administration that minimizing cumulative effects is possible and an effective method for maintaining productive timber sites.

ENVIRONMENTAL EFFECTS
Description of Alternatives
No Action Alternative
No timber harvest or associated activities would occur under this alternative.

Action Alternative
Two units totaling approximately 572 acres would be harvested under the Action Alternative. Approximately 506 acres would be harvested using conventional ground-based equipment while the remaining 66 acres would be treated using cable methods. In addition, approximately 0.9 miles of new road would be constructed, and approximately 1.4 miles of road would be reconditioned as necessary to haul logs and minimize erosion potential. Some harvest would be completed under winter conditions, although the majority of the harvest could be done in the summer or winter.

Direct and Indirect Effects
No Action Alternative
No timber harvest or associated activities would occur under this alternative. Erosion is expected to increase substantially in the first year after the fire on severely burned sites and decline as vegetation becomes reestablished. As vegetation recovers and dead trees fall on the steep slopes, the sediment delivery potential will diminish greatly. Low and moderately burned areas will experience an increase in erosion potential but, duff and roots will serve to limit erosion.

Action Alternative
To provide an adequate analysis of potential impacts to soils, a brief description of implementation requirements is necessary. The Administrative Rules of Montana 36.11.422 (2) and (2)(a) state that appropriate BMPs shall be determined during project design and incorporated into implementation. To ensure the incorporated BMPs are implemented, the specific requirements would be incorporated into the DNRC Timber Sale Contract. As part of this alternative design, the following BMPs are considered appropriate and, therefore would be implemented during harvest operations:

1) Limit equipment operations to periods when soils are relatively dry, (less than 18% soil moisture), frozen or snow covered (12 inches packed or 18 inches unconsolidated) to minimize soil compaction and rutting, and maintain drainage features. Check soil moisture conditions prior to equipment start-up.
2) On ground skidding units, the logger and sale administrator will agree to a general skidding plan prior to equipment operations. Skid trail planning would identify which main trails to use, and what additional trails are needed. Trails that do not comply with BMPs (i.e. draw bottom trails) would not be used and may be closed with additional drainage installed where needed or grass seeded to stabilize the site and control erosion.
3) Tractor skidding should be limited to slopes less than 40% unless the operation can be completed without causing excessive erosion. Short steep slopes above incised draws may require a combination of mitigation measures based on site review, such as adverse skidding to ridge or winch line skidding from more moderate slopes less than 40%. All cable yarding must have lift on the leading end of the log to limit soil disturbance.
4) Keep skid trails and landings to 20% or less of the harvest unit acreage. Provide for drainage in skid trails and roads concurrent with operations.
5) In areas of moderate to high burn severity, contour fall 5-10 sub-merchantable trees per acre to limit soil disturbance, promote nutrient cycling and moisture retention.
6) Retain 10 to 15 tons large woody debris and a majority of all available fine litter feasible following harvest.

Considering data from the DNRC Soil Monitoring Report (DNRC, 2004), the implementation of Forestry Best Management Practices has resulted in less risk of detrimental soil impacts from erosion, displacement and severe compaction. While the report noted that the impacts were more likely on the fine textured soils and steep slopes, reduced soil productivity due to compaction and displacement may occur on coarser parent materials similar to those found in the state parcels. Also, the greatest impacts were noted where harvest implementation departed from BMPs such as limiting ground-based skidding to slopes of 40 percent or less.

Comparing the soil type map, field reconnaissance notes and topographic map features with the proposed harvest unit map indicates that under this alternative ground-based skidding would occur on slopes of up to 40%, on well-drained relatively rocky soils. If harvested during the summer months the extent of impacts expected would likely be similar to those reported by Collins (DNRC, 2004), or approximately 12-14% of the harvest area. If winter harvest is implemented throughout the sale area, actual impacts would likely be less. Potential impacts to soils from the cable yarding units would be less than 10% of the area. This level of impact assumes corridor spacing of at least 75 feet, and impacts generally confined to a 6-8 feet width. Potential impacts to soils from cable yarding units would generally be displacement although some compaction could occur. In addition, cable corridors pose a slight risk of routing water because the corridor is generally parallel to the fall-line of the hillslope.

In addition to the potential impacts from harvesting, approximately 3.4 acres would be taken out of production and converted to roads. Road construction would likely result in more erosion than native topography; however BMP implementation would minimize the risk of erosion. Because no stream crossings are proposed, the risk of delivering soil to watercourses would be very low. Table ST-3 summarizes the expected impacts to soils within harvest units.

Table ST-3: Expected acres of impact to soil from compaction and displacement

Harvest Method and Season	No Action Alternative	Action Alternative
Ground Based (12-14% of harvest area)	0	61-71 acres
Cable (10% of harvest area)	0	7 acres
Area removed from production due to road construction	0	3.4 acres
Total Area of Impacts (acres)	0	71.4-81.4
Total Harvest Acres	0	572
Percent Area Impacted		12.5%-14.2%

Cumulative Soil Effects

Cumulative effects would be controlled by limiting the area of adverse soil impacts to less than 15% of harvest units (as recommended by the SFLMP) through implementation of BMPs, skid trail planning on tractor units and limiting operations to dry or frozen conditions. Harvest units with detrimental cumulative effects (compaction and displacement) greater than 20% of the area may require some restoration. Future harvest opportunities would likely use the same road system, skid trails and landing sites to reduce additional cumulative impacts. Large woody debris would be retained for nutrient cycling long-term soil productivity

Some of the area proposed for harvest under this alternative have been harvested in the past using ground based harvest methods. In order to limit cumulative impacts, existing skid trails would be used if they are properly located and adequately spaced. By reusing existing skid trails and mitigating the direct and indirect effects with soils moisture restrictions, season of use and method of harvest, the risk of unacceptable long-term impacts to soil productivity would be low.

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HYDROLOGY/FISHERIES ANALYSIS

Introduction
This analysis is designed to disclose the existing condition of the hydrologic resources and display the anticipated effects that may result from each alternative of this proposal. During the initial scoping, no issues were identified by the public regarding water quality or quantity or fisheries resources. The following issue statements were expressed from internal comments regarding the effects of proposed timber harvesting:

- Timber harvesting and road construction activities may increase sediment delivery into streams and affect water quality.

These issues can best be evaluated by analyzing the anticipated effects of harvest prescriptions and sediment delivery on the water quality of streams in the project area

The Environmental Effects sections disclose the anticipated indirect, direct and cumulative effects to water resources within the analysis area from the proposed actions. Past, current, and future planned activities on all ownerships within each analysis area have been taken into account for the cumulative effects analysis.

The primary concerns relating to aquatic resources within the analysis area are potential impacts to water quality from sources outside the channel In order to address this issue the following parameters are analyzed by alternative:
-Miles of new road construction and road improvements
-Potential for sediment delivery to streams

Issues Dismissed from Further Analysis
1) Water Yield- Because of the substantial reduction in green vegetation as a result of the Chippy Creek Fire, water yields are expected to be much higher than prefire conditons. However, the proposed removal of dead trees would likely have an immeasurable effect to water yield and therefore will not be further addressed.

2) Fisheries Habitat Parameters- During field review, no fish-bearing streams were identified within the state parcel. Furthermore, no streams were identified in the parcel that contributes to Mill Creek; and ephemeral channels are the only streams present in the Mill Pocket Creek drainage. Both streams are completely intercepted by the Camas Division Camas C Canal prior to the natural confluence with the Little Bitterroot River. Therefore, no further analysis of fisheries will be conducted.

Analysis Methods
Sediment Delivery
The methods applied to the project area to evaluate potential direct, indirect and cumulative effects include a field review to look at potential sediment sources from haul routes. Roads were evaluated to determine existing sources of introduced sediment. In addition, soil types in the project area were reviewed to identify areas prone to sediment delivery. Because this is a culturally sensitive area, very limited field reconnaissance was conducted on other ownerships. Stream channel and watershed characteristics are primarily taken from CSKT reports.

Analysis Area
Sediment Delivery
The analysis area for sediment delivery is limited to the proposed harvest units and roads used for hauling. This includes the upland sources of sediment that could result from this project.

Water Uses and Regulatory Framework
Water Quality Standards

This portion of the Flathead Indian Reservation, including the tributaries to the Little Bitterroot River is classified as B-1 by the Confederated Salish and Kootenai Tribes as stated in the Surface Water Quality Standards and AntiDegradation Policy Section 1.3.7. The water quality standards for protecting beneficial uses in B-1 classified watersheds are located in the policy in Section 1.3.7 (C). Water in B-1 classified waterways is suitable for drinking, culinary and food processing purposes after conventional treatment, bathing, swimming and recreation, growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers, and agricultural and industrial water supply. Tribal water quality regulations prohibit any increase in sediment above naturally occurring concentration in water classified B-1. Naturally occurring means the range, mean, mode and other appropriate descriptors of seasonal water quality in Reservation waters occurs at levels over which humans have no control or material derived from runoff or percolation over developed land occurs where all reasonable and cost-effective best management practices have been applied

Streamside Management Zone Law (SMZ)
All rules and regulations pertaining to the Streamside Management Zone (SMZ) Law will be followed. An SMZ width of 100 feet is required on Class I and II streams when the slope is greater then 35%. An SMZ width of 50 feet is required when the slope is less than 35%.

In addition, the Forestry Best Management Practices: Confederated Salish and Kootenai Tribes must be followed. While these are similar to the Montana SMZ law, stream class definitions and buffer widths differ.

When applying buffer widths on the ground, DNRC will be implementing the most restrictive requirement between the two regulations.

EXISTING CONDITION
Sediment Delivery
The project area is slit between two watersheds: Mill Creek and Mill Pocket Creek. Both streams are completely intercepted by the Camas Division Camas C Canal. Mill Creek is the larger of the two streams and has some field-based channel survey information. Due to the proximity to Mill Pocket Creek, it is assumed that the stream attributes for Mill Creek are also applicable to Mill Pocket Creek.

The Mill Creek watershed encompasses approximately 18,565 acres. Montana DNRC manages approximately 365 of these acres or 1.9% of the watershed. The majority of the watershed is managed and owned by the Confederated Salish and Kootenai Tribes with smaller amounts owned by private individuals. No stream channels were identified in the project area that contribute to Mill Creek. Mean annual precipitation is 24 inches per year contributing to perennial flow. As described in the *draft* Chippy Salvage EA (CSKT, 2007), Mill Creek maintains the greatest stream flow of the two watersheds. Mill Creek is described as a B4c (Rosgen, 1996) stream type with a high bank and bed stability due to the coarse material present. According to the Montana Fisheries Information System (MFISH), purestrain westslope cutthroat trout inhabit the stream.

The Mill Pocket watershed encompasses approximately 3700 acres. Montana DNRC manages approximately 390 of these areas or 10.5% of the watershed. The remainder of this watershed is also managed and owned by the CSKT and private individuals. Two ephemeral draws/CSKT Class III channels were found in the project area with intermittent scour, although these channels likely do not convey water on an annual basis. No data was found regarding fish in this stream.

During field reconnaissance, no sediment delivery to streams on DNRC lands was identified from roads or upland sources. The steep slopes near the draws and CSKT Class III channels have a high delivery potential due to their slopes and proximity to the stream.

ENVIRONMENTAL EFFECTS

Description of Alternatives

No Action Alternative

No timber harvest or associated activities would occur under this alternative.

Action Alternative

Two units totaling approximately 572 acres would be harvested under the Action Alternative. Approximately 506 acres would be harvested using conventional ground-based equipment while the remaining 66 acres would be treated using cable methods. In addition, approximately 0.9 miles of new road would be constructed, and approximately 1.4 miles of road would be reconditioned as necessary to haul logs and minimize erosion potential. Some harvest would be completed under winter conditions, although the majority of the harvest could be done in the summer or winter.

Direct and Indirect Effects

Sediment Delivery

No Action Alternative

Under this alternative, no timber harvest or related activities would occur. Sediment delivery in heavily burned watersheds may increase during snowmelt or rainfall events until a vegetative cover and filter reestablishes Ground vegetation functions as a protective cover from rain drop impact as well holding soil (roots) and preventing erosion. Increased scouring of draws and channels would likely occur resulting in additional sediment transport.

Action Alternative

Sediment delivery in heavily burned watersheds may increase during snowmelt or rainfall events until a vegetative cover and filter reestablishes. Increased scouring of draws and channels would likely occur resulting in additional sediment transport.

Because no streams are present to transport sediment into Mill Creek, the risk of direct sediment delivery as a result of this alternative would be low.

In the Mill Pocket watershed, harvesting within the 50-foot SMZ of the two Class III streams would occur. According to 36.11.425, due to high erosion risk soils a Riparian Management Zone (RMZ) would be implemented on steep areas adjacent to the Class III reach of Mill Pocket Creek. No harvesting would occur within 25-feet of any channel and selective harvest would implemented in the remaining 25-feet of the SMZ. Operations near the Class III streams would require trees to be hand felled and skidded during the winter to reduce the risk of soil displacement and sediment delivery.

The proposed road construction does not include new stream crossings. All construction would occur well away from streams on soils that are well drained. Because revegetation may be difficult on the road fill, erosion may occur, but due to the buffer provided by the distance from streams, sediment delivery and subsequent water quality impacts are not likely to occur.

Because DNRC would incorporate BMPs into the project design as required by ARM 36.11.422 (2), and all laws pertaining to SMZs would be followed, sediment delivery due timber harvest would have a low to moderate risk of to entering streams in the project area. The risk of long-term adverse direct or indirect effects to water quality or beneficial uses would be low.

Cumulative Watershed Effects

Sediment Delivery

No Action Alternative

Sediment generated as a result of the Chippy Creek fire and subsequent reduction in vegetative buffers would increase until vegetation reestablishes. Sediment delivery in heavily burned watersheds may increase during snowmelt or rainfall events until a vegetative filter reestablishes. Debris jams may increase as large quantities of woody debris are incorporated into streams.

These debris jams may result in additional sediment delivery as channels migrate and adjust to the post-fire conditions.

Action Alternative
There would be a low risk of additional cumulative effects from the implementation of this alternative beyond those described under the No Action Alternative because of the following reasons:

1) Operations near streams would occur under frozen and/or snow covered conditions. This would reduce the potential for soil displacement and subsequent sediment transport,
2) No stream crossings were identified on the haul route that would increase sediment delivery.

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CULTURAL RESOURCES INVENTORY OF THE PROPOSED MILL POCKET TIMBER SALE: SANDERS COUNTY, MONTANA

Report prepared for
the Montana Department of Natural Resources
and Conservation (DNRC)
Helena, MT 59620

by

Patrick J. Rennie (DNRC, Helena)

November 2007

DNRC Project No. 2007-1-4

ABSTRACT

During October 23rd through October 24th, 2007, the author and three Department of Natural Resources and Conservation (DNRC) staff conducted an inventory of cultural and paleontologic resources of Section 36, T24N R25W. The inventory work was conducted in response to a burned timber salvage proposed by the DNRC. The purpose of the salvage is to generate revenue for the School Trust that will otherwise be lost. The tract of state land from which timber will be harvested lies within the Flathead Indian Reservation in Sanders County, Montana. Burned timber is proposed to be salvaged throughout the state parcel effecting as much as 640 acres of land. All of Section 36, T24N R25W was inventoried to BLM Class III level standards as part of the inspection reported on here. During the course of inventory one cultural property (24SA589) was identified and formally recorded. This site consists of a series of 11 low-profile cairns on the north slope of a timbered ridge in mountainous terrain. Age and function of the cairns cannot be determined, but present evidence suggests that the cultural features in the site may be approximately 20 years old. Although it has not been determined whether or not this cultural property is potentially eligible for listing in the National Register of Historic Places, the arbitrarily defined boundaries of this site can be flagged and easily avoided with proposed timber salvage activities.

ACKNOWLEDGEMENTS

Stephanie Kellogg, Dave Mousel and Doug Shaner assisted the author in the field with cultural resource inventory work. Project coordinators, Dave Olsen and Doug Shaner also provided the author with detailed maps of the project area. Mr. Shaner's knowledge of the layout of the state parcel, from which timber is proposed to be harvested, was invaluable for accurately identifying property boundaries which are otherwise poorly delimited.

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1.0 INTRODUCTION

The Department of Natural Resources and Conservation (DNRC) is proposing to harvest timber from as much as 640 acres of state land in Sanders County, Montana (Figure 1). The purpose of the sale is to salvage timber burned during a wildfire that swept through the area in 2007. The proposed timber salvage, designated as the Mill Pocket Timber Salvage, will generate revenue for the School Trust that otherwise will be lost.

During October 23rd and October 24th, 2007, the author and three DNRC staff members conducted an inventory of cultural and paleontologic resources of the entire Section 36, T24N R25W (Figure 2). The following report provides a detailed description of the project area, the field methods used, and the results of that inventory.

2.0 PREFIELD STUDIES

Prior to conducting fieldwork, the senior author inspected the DNRC's sites/site leads database, land use records, General Land Office maps, and control cards for potential cultural resources in the proposed project area. The 1905 GLO map (based on a 1904 survey) does not indicate any cultural resources such at trails, roads or cabins on the state parcel. A search of the DNRC's TLMS database indicated that no cultural or paleontologic remains have been identified within the proposed project area, but no previous cultural or paleontologic resource inventories have occurred either.

The DNRC's land management records indicate that the parcel was logged to a moderate degree in the late 1940's. Further, in the late 1980's state unauthorized post and pole harvesting occurred extensively on a portion of the ridge in the NW1/4 of Section 36, T24N R25W. Today, past logging operations are evidenced by frequent stumps and a complex network of relatively subtle and re-vegetated skid trails and a lesser number of access trails. Additionally, Marcia Cross of the Confederated Salish and Kootenai Tribes' Tribal Historic Preservation Office (THPO) commented to DNRC Trust Lands Program Manager, Shawn Thomas, that although the THPO was unaware of cultural resources on the tract, the possibility did exist (Dave Olsen pers. comm. to Patrick Rennie 2007).

3.0 PROJECT AREA DESCRIPTION

The proposed project area consists of a 1 mile square, 640 acre contiguous block of land legally described as Section 36, Township 24 North, Range 25 West (Figure 2). Timber is expected to be harvested from throughout the state parcel. Fallen trees will be dragged to landing zones using tracked and/or rubber tired vehicles and cable yarding methods on the steepest slopes. The topography of the project area tends to be moderately to severely undulating with slopes averaging between 25% and 35% in grade (Figure 3). The pre-fire vegetative community largely consisted of stands of ponderosa pine, Douglas fir, western larch, low-lying shrubs and messic grasses. At the time this inventory was conducted, ground surface visibility was generally fair (20% to 30% visibility) due to the rather uniform conifer needle littermat that has formed, post-burn, on the forest floor (Figure 4).

The geology of the general area is characterized as hard, fine grained metasediments of the Belt Series. The Belt Series is described as, " a monotonous assemblage of very thick units

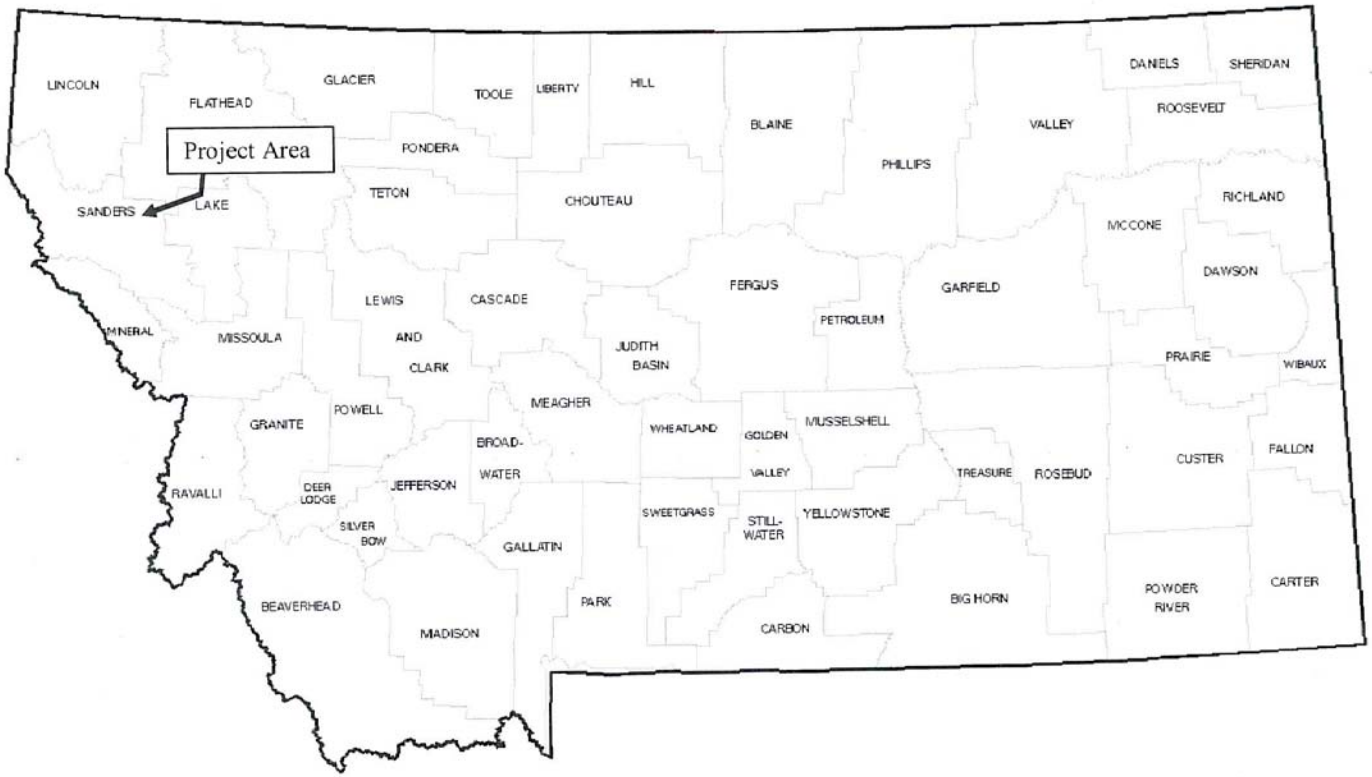

Figure 1: General location of the project area in Montana.

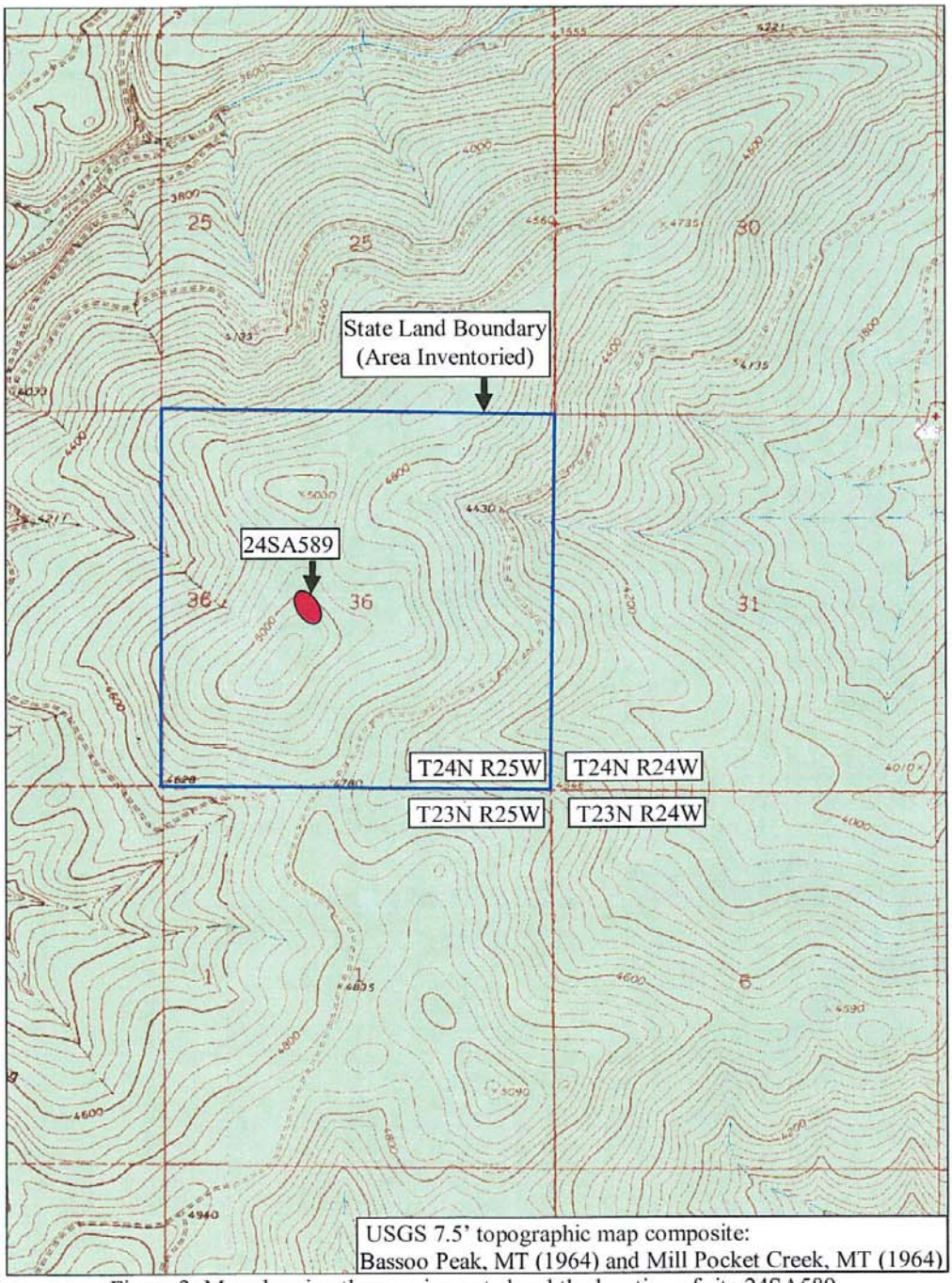

Figure 2: Map showing the area inspected and the location of site 24SA589.

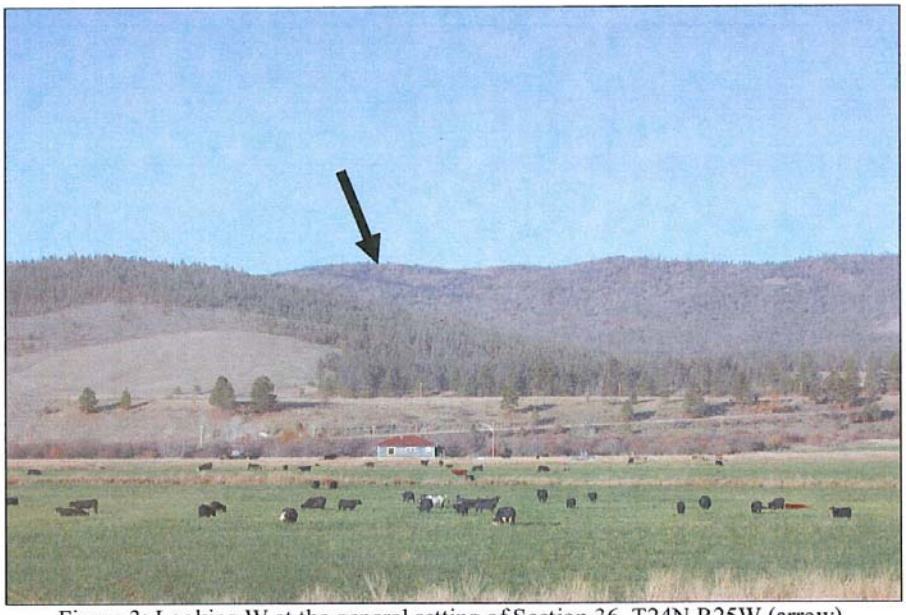

Figure 3: Looking W at the general setting of Section 36, T24N R25W (arrow).

Figure 4: Looking E within a portion of the project area in Section 36, T24N R25W.

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composed mainly of somber-hued, fine grained clastic rocks such as argillites, quartzites, etc., and some subordinate carbonate rocks (Ross 1963)". As such, the presence of locally available sources of tool quality stone, caves or rock shelters was determined to be unlikely. Soils in the site locale vary from those of the Sharott series on the steeper slopes to those of the Perma series at the drainage bottoms (Veseth and Montagne 1980).

4.0 FIELD INVESTIGATIVE METHODS

Section 36, T24N R25W was inventoried using generally parallel pedestrian transects spaced at a maximum width of 30 m. Boundaries of the state tract were not physically marked, but were delimited by red or yellow paint of flagging. Further, assistant project coordinator, Doug Shaner has been involved with boundary marking and cruising of timber on the state parcel, so his knowledge of the layout of Section 36 (T24N R25W) was invaluable in the field. Subsurface examination in the project area consisted of an inspection of existing exposures such as eroded/denuded ground surfaces, road cuts and surfaces, and tree throws.

5.0 RESULTS OF FIELDWORK

During the course of inventory, one previously undocumented possible cultural resource site was identified and formally recorded. This site consists of a series of 11 low-profile cairns. Although age and function of the cultural property is presently unknown, it may have formed within the past 20 years. A summary of this cultural resource follows. A detailed discussion and illustrations can be found in the CRIS form at Appendix 1 of this report:

PROPERTY NUMBER AND NAME:

24SA589 (Figure 2; Appendix 1)

PROPERTY TYPE:

Cairns

PROPERTY DESCRIPTION:

The site consists of a series of 11, low-profile, unsodded cairns on the north slope of a high ridge in mountainous terrain of NW Montana. All of the cairns are low-profile heaps/accumulations of rock and none show evidence of ever having been stacked. None of the exposed surfaces of the rocks constituting the cairns exhibit any lichen development although this may be a result of the wildland fires of 2007 burning over the site area and effectively removing any established lichen colonies or former weathered surfaces. The rock constituting each cairn is locally available Belt Series quartzite, but the size and general characteristics of the constituent cairn pieces suggest rock that was collected largely or wholly off-site and transported to the site locale. Locally available rock pieces are numerous, but tend to be smaller in length/width and thickness than many of the constituent cairn stones. Further, the fracture surfaces and edges of the constituent cairn stones tend to be sharp and rather fresh in appearance

whereas the common local rock pieces tend to have more rounded and weathered surfaces and edges. A general impression is that most of the constituent cairn stones may have been collected from a quarry, road cut or some other kind of subsurface exposure that would provide access to large blocky pieces of rock.

Approximately 20 years prior to preparation of this site form, timber in the size range of post and pole material was harvested from, and adjacent to, the defined site area without authorization of the State of Montana. At that time, a limited number of two-track trails were established as access/haul roads. Ten of the 11 cairns are located at the margins of these two track trails. Cairn 1 is located within 10 m of a two-track trail, but adjacent to a burned stump of a tree that presumably was harvested approximately 20 years ago. One possibility for formation of the cairns is that large, blocky pieces of rock were collected from the margin of the road leading to the state parcel for use as ballast in a two wheel drive pickup during times when the sediments in the general site area were wet or snow covered. When the driver arrived at the harvest locale, the ballast was off-loaded in a heap alongside the two-track trails to make room for post and pole material. A description of each observed cairn in the site follows:

Cairn 1 measures approximately 220 cm north/south x 140 cm east/west x 40 cm in height. The cairn is well consolidated and composed of approximately 23 culturally unmodified blocky quartzite pieces that range from 15 cm to 50 cm in maximum dimension and are arranged in three tiers. A juvenile snowberry bush is growing up through the rocks constituting the cairn.

Cairn 2 measures approximately 140 cm north/south x 125 cm east/west x 30 cm in height. The cairn is moderately-well consolidated and composed of approximately seven culturally unmodified blocky quartzite pieces that range from 15 cm to 40 cm in maximum dimension and are arranged in one tier. A burned, aluminum Busch beer can was observed adjacent to Cairn 2.

Cairn 3 measures approximately 160 cm north/south x 140 cm east/west x 30 cm in height. The cairn is well consolidated and composed of approximately 12 culturally unmodified blocky quartzite pieces that range from 30 cm to 60 cm in maximum dimension and are arranged in two tiers. Bear Grass is growing up through portions of the cairn and at least two of the stones constituting the feature have been set, pre-fire, on former bear grass clumps—effectively killing these plants. Further, an aluminum Coca-Cola can and an aluminum RC Cola can were noted among the stones of the cairn.

Cairn 4 measures approximately 190 cm north/south x 100 cm east/west x 25 cm in height. The cairn is moderately-well consolidated and composed of approximately nine culturally unmodified blocky quartzite pieces that range from 40 cm to 60 cm in maximum dimension and are arranged in two tiers. Grass is growing up through portions of the cairn.

Cairn 5 measures approximately 185 cm north/south x 150 cm east/west x 40 cm in height. The cairn is poorly consolidated and composed of approximately nine culturally unmodified blocky quartzite pieces that range from 30 cm to 60 cm in maximum dimension and are arranged in one tier. The cairn was previously located adjacent to a stump (possibly associated with state authorized logging activities in 1948) that was fully consumed (above and below the ground surface) during the wildland fire of 2007.

Cairn 6 measures approximately 260 cm north/south x 150 cm east/west x 30 cm in height. The cairn is poorly consolidated and composed of approximately six culturally unmodified blocky quartzite pieces that range from 20 cm to 50 cm in maximum dimension and are arranged in one tier.

Cairn 7 measures approximately 140 cm north/south x 110 cm east/west x 25 cm in height. The cairn is well consolidated and composed of approximately eight culturally unmodified blocky quartzite pieces that range from 30 cm to 60 cm in maximum dimension and are arranged in two tiers. Bear Grass is growing up through portions of the cairn and two of the stones constituting the feature have been set, pre-fire, on former bear grass clumps—effectively killing these plants. Further, a Coca-Cola can and an aluminum RC Cola can were noted among the stones of the cairn.

Cairn 8 measures approximately 80 cm north/south x 90 cm east/west x 30 cm in height. The cairn is well consolidated and composed of approximately four culturally unmodified blocky quartzite pieces that range from 35 cm to 40 cm in maximum dimension and are arranged in one tier.

Cairn 9 measures approximately 180 cm north/south x 145 cm east/west x 35 cm in height. The cairn is well consolidated and composed of approximately 15 culturally unmodified blocky quartzite pieces that range from 20 cm to 60 cm in maximum dimension and are arranged in one or two tiers.

Cairn 10 measures approximately 130 cm north/south x 100 cm east/west x 30 cm in height. The cairn is well consolidated and composed of approximately 10 culturally unmodified blocky quartzite pieces that range from 30 cm to 50 cm in maximum dimension and are arranged in two tiers. The cairn was partially constructed over a sawn-off, and now largely burned, 4.5 inch diameter stump possibly associated with state unauthorized post and pole harvest activities that occurred on the parcel in the late 1980's.

Cairn 11 measures approximately 70 cm north/south x 160 cm east/west x 40 cm in height. The cairn is well consolidated and composed of approximately eight culturally unmodified blocky quartzite pieces that range from 30 cm to 60 cm in maximum dimension and are arranged in one tier. The cairn was partially constructed over a sawn-off, and now largely burned, 4.5 inch diameter stump possibly associated with state unauthorized post and pole harvest activities that occurred on the parcel in the late 1980's.

In conclusion, the date of cairn construction and the individual(s) responsible for construction of the cairns, are unknown factors. Realistically, the cairns may have been produced anytime during the span of human occupation of the region and could have been produced for a great number of possible reasons. Visual characteristics alone are inadequate measurement techniques for gauging a cairn's age and function (Rennie and Lahren 2004). However, based largely on evidences observed at Cairns 3, 10 and 11 it appears that the cultural features in the site may be contemporary with, or post-date, unauthorized post and pole harvesting activities that occurred in the late 1980's. Even if the cairns in the site can be demonstrated to be less than 50 years old, at the very least then, this documentation will serve as a record of what was observed on the ground in October of 2007.

CONDITION/INTEGRITY:

The site generally retains integrity of design, location, materials setting and workmanship. Integrity of feeling and association cannot be determined until more is known about the cairns comprising the site.

EVALUATION OF SIGNIFICANCE:

As indicated on page 12 of National Register Bulletin #15 (NRB 15) a property can be considered significant in association with Criterion A if a relationship between the site and a significant event or pattern of events within a defined time period can be demonstrated. Additionally, "Mere association with historic events or trends is not enough, in and of itself, to

qualify under Criterion A (NRB 15:12)". Presently there is no way of determining the age or function of the site by visual inspection alone. Prehistoric, ethnographic, ethnohistoric and contemporary peoples have constructed cairns for numerous possible reasons throughout the world (Rennie and Lahren 2004) and these cairns can take on a myriad of configurations. Until more is understood about the site's cultural features its significance in association with Criterion A cannot be resolved.

A property is considered significant in association with Criterion B if a link between the site and a person significant in local, regional, or national history or prehistory can be demonstrated (NRB 15:14). Because of the improbability that such a tie could ever be made, the site is recommended as insignificant in association with Criterion B.

A property can be considered significant in association with Criterion C if it can be demonstrated to, "Embody distinctive characteristics of a type, period, or method of construction (NRB 15:18)." In order for a property to meet that requirement it must exhibit a sufficient number of" distinctive characteristics" representative of a particular method of construction. Further, "Characteristics can be expressed in terms such as form, proportion, structure, plan, style, or materials. They can be general, referring to ideas of design and construction such as basic plan or form... (NRB 15:18)". The site consists of a series of 11 low-profile concentrations of heaped stones. Visually and structurally similar features are a common human phenomenon and these structures are known to have originally functioned in a variety of ways (Rennie and Lahren 2004). No unusual or unique aspects such as engineering feats, or ethnic or temporally specific construction is identifiable for the cairns. Because of this, the site is recommended here as lacking significance in association with Criterion C.

Finally, a property is considered significant in association with Criterion D if it has yielded, or may be likely to yield, information important in prehistory or history (NRB 15:21). Until more is understood about the site its significance in association with Criterion D cannot be resolved.

NATIONAL REGISTER ELIGIBILITY:

The eligibility of this property for listing in the National Register of Historic Places has not been determined.

POSSIBLE IMPACTS TO SITE:

None identified

RECOMMENDATIONS:

No further archaeological investigative work is recommended.

6.0 SUMMARY AND CONCLUSIONS

During October 23rd through October 24th, 2007, the author and three Department of Natural Resources and Conservation (DNRC) staff conducted an inventory of cultural and paleontologic resources of Section 36, T24N R25W. The inventory work was conducted in response to a burned timber salvage proposed by the DNRC. The purpose of the salvage is to generate revenue for the School Trust that will otherwise be lost. The tract of state land from

which timber will be harvested lies within the Flathead Indian Reservation in Sanders County, Montana. Burned timber is proposed to be salvaged throughout the state parcel effecting as much as 640 acres of land. All of Section 36, T24N R25W was inventoried to BLM Class III level standards as part of the inspection reported on here. During the course of inventory one cultural property (24SA589) was identified and formally recorded. This site consists of a series of 11 low-profile cairns on the north slope of a timbered ridge in mountainous terrain. Age and function of the cairns cannot be determined, but present evidence suggests that the cultural features in the site may be approximately 20 years old. Although it has not been determined whether or not this cultural property is potentially eligible for listing in the National Register of Historic Places, the arbitrarily defined boundaries of this site can be flagged and easily avoided with proposed timber salvage activities. If the site is avoided it is recommended here that the proposed Mill Pocket Timber Salvage Sale will have *No Effect* to Heritage/Historic Properties.

REFERENCES CITED

Rennie, P. and Larry A. Lahren
2004 An Annotated Bibliography of Ethnographic, Archaeological, Ethnohistoric, and Contemporary Cairn References. Unpublished manuscript on file with the authors.

Ross, C.P.
1963 The Belt Series in Montana. U.S. Geologic Survey Professional Paper #346. pp. 1-122.

Veseth, R. and C. Montagne
1980 Geologic Parent Materials of Montana Soils. Montana State University and USDA-Soil Conservation Service Bulletin 721. Document dated November, 1980.

Appendix 1: CRIS Form for 24SA589

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
CULTURAL RESOURCE SITE FORM

I. IDENTIFICATION: Smithsonian No.: 24SA589 **Field No.:** MP-1
DNRC Project No: 2007-1-4 **Project Name:** Mill Pocket Timber Salvage

II. LOCATION: State: MT **County:** Sanders
Land Status: State Land (School Trust Land administered by the DNRC)
7.5' USGS Map Composite: Bassoo Peak, MT (1964) and Mill Pocket Creek, MT (1964)
Legal Description: NE1/4NW1/4NE1/4SW1/4, NW1/4NE1/4NE1/4SW1/4 and the SE1/4SW1/4SE1/4NW1/4 of Section 36, T24N R25W

UTM Coordinates for cairns 1-11: Zone: 11 North; Datum: NAD83 conus

Cairn 1:	668,704 **mE;**	5,296,267 **mN;**
Cairn 2:	668,687 **mE;**	5,296,271 **mN;**
Cairn 3:	668,682 **mE;**	5,296,263 **mN;**
Cairn 4:	668,764 **mE;**	5,296,178 **mN;**
Cairn 5:	668,777 **mE;**	5,296,175 **mN;**
Cairn 6:	668,784 **mE;**	5,296,170 **mN;**
Cairn 7:	668,789 **mE;**	5,296,160 **mN;**
Cairn 8:	668,784 **mE;**	5,296,158 **mN;**
Cairn 9:	668,783 **mE;**	5,296,154 **mN;**
Cairn 10:	668,784 **mE;**	5,296,148 **mN;**
Cairn 11:	668,787 **mE;**	5,296,141 **mN**

III. ACCESS: Access to this site is through tribal property, so permission of the Confederated Salish and Kootenai Tribes must be obtained before attempting to visit this cultural resource.

IV. TYPE: Cairns

V. APPARENT PERIOD OF SITE USAGE OR CONSTRUCTION: Unknown, but possibly within the past 20 years.
Dating Potential: Fair

VI. SITE DIMENSIONS: The site is contained within an area which measures approximately 165 m NW/SE x 50 m NE/SW. Site boundaries are arbitrarily established at approximately 15 m outside the margins of the cairns composing the site.

Methods Used: Visual inspection, a Trimble Geo-Explorer III GPS unit, and a tape measure
Depth of Cultural Remains: Appears to be restricted to the ground surface.
Surface Visibility: 20% **Associated Sites:** Unknown

VII. DESCRIPTION (integrity, previous disturbance, description of materials observed): The site consists of a series of 11, low-profile, unsodded cairns on the north slope of a high ridge in mountainous terrain of NW Montana. All of the cairns are low-profile heaps/accumulations of rock and none show evidence of ever having been stacked. None of the exposed surfaces of the rocks constituting the cairns exhibit any lichen development although this may be a result of the wildland fires of 2007 burning over the site area and effectively removing any established lichen colonies or former weathered surfaces. The rock constituting each cairn is locally available Belt Series quartzite, but the size and general characteristics of the constituent cairn pieces suggest rock that was collected largely or wholly off-site and transported to the site locale. Locally available rock pieces are numerous, but tend to be smaller in length/width and thickness than many of the constituent cairn stones. Further, the fracture surfaces and edges of the constituent cairn stones tend to be sharp and rather fresh in appearance whereas the common local rock pieces tend to have more rounded and weathered surfaces and edges. A general impression is that most of the constituent cairn stones may have been collected from a quarry, road cut or some other kind of subsurface exposure that would provide access to large blocky pieces of rock.

Approximately 20 years prior to preparation of this site form, timber in the size range of post and pole material was harvested from, and adjacent to, the defined site area without authorization of the State of Montana. At that time, a limited number of two-track trails were established as access/haul roads. Ten of the 11 cairns are located at the margins of these two track trails. Cairn 1 is located within 10 m of a two-track trail, but adjacent to a burned stump of a tree that presumably was harvested approximately 20 years ago. One possibility for formation of the cairns is that large, blocky pieces of rock were collected from the margin of the road leading to the state parcel for use as ballast in a two wheel drive pickup during times when the sediments in the general site area were wet or snow covered. When the driver arrived at the harvest locale, the ballast was off-loaded in a heap alongside the two-track trails to make room for post and pole material. A description of each observed cairn in the site follows:

Cairn 1 measures approximately 220 cm north/south x 140 cm east/west x 40 cm in height. The cairn is well consolidated and composed of approximately 23 culturally unmodified blocky quartzite pieces that range from 15 cm to 50 cm in maximum dimension and are arranged in three tiers. A juvenile snowberry bush is growing up through the rocks constituting the cairn.

Cairn 2 measures approximately 140 cm north/south x 125 cm east/west x 30 cm in height. The cairn is moderately-well consolidated and composed of approximately seven culturally unmodified blocky quartzite pieces that range from 15 cm to 40 cm in maximum dimension and are arranged in one tier. A burned, aluminum Busch beer can was observed adjacent to Cairn 2.

Cairn 3 measures approximately 160 cm north/south x 140 cm east/west x 30 cm in height. The cairn is well consolidated and composed of approximately 12 culturally unmodified blocky quartzite pieces that range from 30 cm to 60 cm in maximum dimension and are arranged in two tiers. Bear Grass is growing up through portions of the cairn and at least two of the stones constituting the feature have been set, pre-fire, on former bear grass clumps—effectively killing these plants. Further, an aluminum Coca-Cola can and an aluminum RC Cola can were noted among the stones of the cairn.

Cairn 4 measures approximately 190 cm north/south x 100 cm east/west x 25 cm in height. The cairn is moderately-well consolidated and composed of approximately nine culturally unmodified blocky quartzite pieces that range from 40 cm to 60 cm in maximum dimension and are arranged in two tiers. Grass is growing up through portions of the cairn.

Cairn 5 measures approximately 185 cm north/south x 150 cm east/west x 40 cm in height. The cairn is poorly consolidated and composed of approximately nine culturally unmodified blocky quartzite pieces that range from 30 cm to 60 cm in maximum dimension and are arranged in one tier. The cairn was previously located adjacent to a stump (possibly associated with state authorized logging activities in 1948) that was fully consumed (above and below the ground surface) during the wildland fire of 2007.

Cairn 6 measures approximately 260 cm north/south x 150 cm east/west x 30 cm in height. The cairn is poorly consolidated and composed of approximately six culturally unmodified blocky quartzite pieces that range from 20 cm to 50 cm in maximum dimension and are arranged in one tier.

Cairn 7 measures approximately 140 cm north/south x 110 cm east/west x 25 cm in height. The cairn is well consolidated and composed of approximately eight culturally unmodified blocky quartzite pieces that range from 30 cm to 60 cm in maximum dimension and are arranged in two tiers. Bear Grass is growing up through portions of the cairn and two of the stones constituting the feature have been set, pre-fire, on former bear grass clumps—effectively killing these plants. Further, a Coca-Cola can and an aluminum RC Cola can were noted among the stones of the cairn.

Cairn 8 measures approximately 80 cm north/south x 90 cm east/west x 30 cm in height. The cairn is well consolidated and composed of approximately four culturally unmodified blocky quartzite pieces that range from 35 cm to 40 cm in maximum dimension and are arranged in one tier.

Cairn 9 measures approximately 180 cm north/south x 145 cm east/west x 35 cm in height. The cairn is well consolidated and composed of approximately 15 culturally unmodified blocky quartzite pieces that range from 20 cm to 60 cm in maximum dimension and are arranged in one or two tiers.

Cairn 10 measures approximately 130 cm north/south x 100 cm east/west x 30 cm in height. The cairn is well consolidated and composed of approximately 10 culturally unmodified blocky quartzite pieces that range from 30 cm to 50 cm in maximum dimension and are arranged in two tiers. The cairn was partially constructed over a sawn-off, and now largely burned, 4.5 inch diameter stump possibly associated with state unauthorized post and pole harvest activities that occurred on the parcel in the late 1980's.

Cairn 11 measures approximately 70 cm north/south x 160 cm east/west x 40 cm in height. The cairn is well consolidated and composed of approximately eight culturally unmodified blocky quartzite pieces that range from 30 cm to 60 cm in maximum dimension and are arranged in one tier. The cairn was partially constructed over a sawn-off, and now largely burned, 4.5 inch diameter stump possibly associated with state unauthorized post and pole harvest activities that occurred on the parcel in the late 1980's.

In conclusion, the date of cairn construction and the individual(s) responsible for construction of the cairns, are unknown factors. Realistically, the cairns may have been produced anytime during the span of human occupation of the region and could have been produced for a great number of possible reasons. Visual characteristics alone are inadequate measurement techniques for gauging a cairn's age and function (Rennie and Lahren 2004). However, based largely on evidences observed at Cairns 3, 10 and 11 it appears that the cultural features in the site may be contemporary with, or post-date, unauthorized post and pole harvesting activities that occurred in the late 1980's. Even if the cairns in the site can be demonstrated to be less than 50 years old, at the very least then, this documentation will serve as a record of what was observed on the ground in October of 2007.

VIII. WATER (leave blank if more than 1 mile from the site):
Perennial (Name): No reliable water sources identified within 1 mile of the site.
Elevation: N/A **Distance and Direction from Site:** N/A

IX. TOPOGRAPHY: The site is located on the north slope of a high ridge in mountainous terrain of NW Montana.

Slope and Direction: The timbered ridge containing the site slopes 15% downward to the north.
Aspect: Limited in all directions—especially so when covered with standing timber.
Site Elevation: ca. 5000 ft/ 1524 m ASL

X. GEOLOGY AND SOILS: The geology of the site area is described as metamorphosed argillite, siltite and quartzite of the Belt Series. Soil development at the site locale is minimal and local sediments are quite stony.

XI. VEGETATION (onsite): messic grasses, shrubs ponderosa pine, lodgepole pine, Douglas fir, larch (currently moderately to heavily burned).

Surrounding: messic grasses, shrubs ponderosa pine, lodgepole pine, Douglas fir, larch (currently moderately to heavily burned).

XII. MANAGEMENT DATA:

A. X **Recorded** **Collected** X **Mapped** **Shovel/Auger Probed** **Excavated**
Stabilized **Other (explain):**

Detail the level of testing or research carried out: Only an intensive on the ground inspection was carried out. No subsurface examination in, or adjacent to, the cairns was conducted. Presently, it is unknown if cultural materials other than those noted in Section VII are associated with this site.

Artifact Repository: N/A, no artifacts were collected.

B. Project Impacts: The site is situated in the general area where burned timber salvage activities will occur. Because the site is located in an area previously harvested for post and pole material, little in the way of ground disturbing activities are expected within the site boundaries.

Other Impacts: None are expected.

C. National Register Eligibility: Unresolved.

Discussion of Significance: As indicated on page 12 of National Register Bulletin #15 (NRB 15) a property can be considered significant in association with Criterion A if a relationship between the site and a significant event or pattern of events within a defined time period can be demonstrated. Additionally, "Mere association with historic events or trends is not enough, in and of itself, to qualify under Criterion A (NRB 15:12)". Presently there is no way of determining the age or function of the site by visual inspection alone. Prehistoric, ethnographic, ethnohistoric and contemporary peoples have constructed cairns for numerous possible reasons throughout the world (Rennie and Lahren 2004) and these cairns can take on a myriad of configurations. Until more is understood about the site's cultural features its significance in association with Criterion A cannot be resolved.

A property is considered significant in association with Criterion B if a link between the site and a person significant in local, regional, or national history or prehistory can be demonstrated (NRB 15:14). Because of the improbability that such a tie could ever be made, the site is recommended as insignificant in association with Criterion B.

A property can be considered significant in association with Criterion C if it can be demonstrated to, "Embody distinctive characteristics of a type, period, or method of construction (NRB 15:18)." In order for a property to meet that requirement it must exhibit a sufficient number of" distinctive characteristics" representative of a particular method of construction. Further, "Characteristics can be expressed in terms such as form, proportion, structure, plan, style, or materials. They can be general, referring to ideas of design and construction such as basic plan or form... (NRB 15:18)". The site consists of a series of 11 low-profile concentrations of heaped stones. Visually and structurally similar features are a common human phenomenon and these structures are known to have originally functioned in a variety of ways (Rennie and Lahren 2004). No unusual or unique aspects such as engineering feats, or ethnic or temporally specific construction is identifiable for the cairns. Because of this, the site is recommended here as lacking significance in association with Criterion C.

Finally, a property is considered significant in association with Criterion D if it has yielded, or may be likely to yield, information important in prehistory or history (NRB 15:21). Until more is understood about the site its significance in association with Criterion D cannot be resolved.

Discussion of Integrity: The site generally retains integrity of design, location, materials setting and workmanship. Integrity of feeling and association cannot be determined until more is known about the cairns comprising the site.

D. Known Collections, Publications, or Reports Pertaining to this Site:
None known.

E. References Cited:

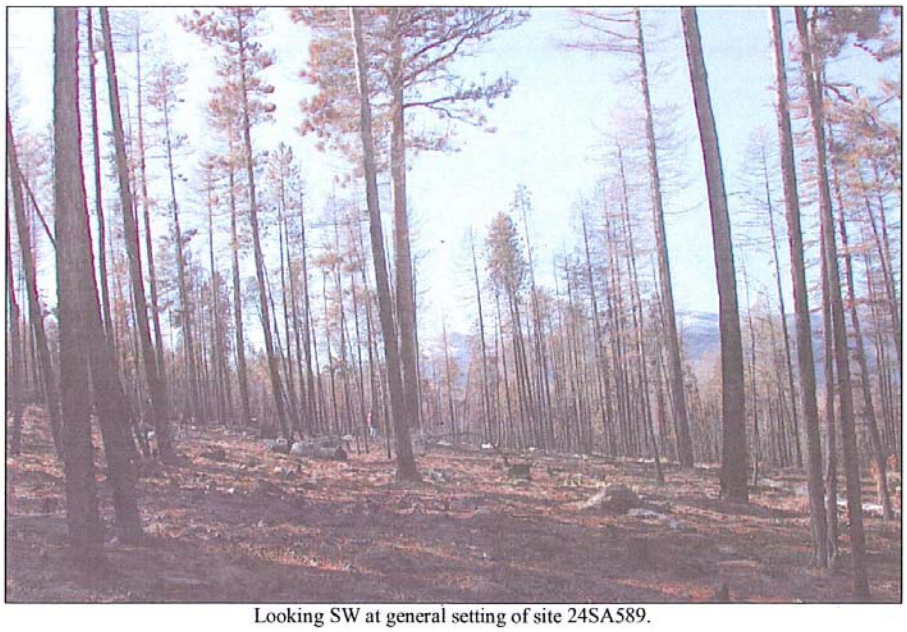
Rennie, P. and Larry A. Lahren
2004 An Annotated Bibliography of Ethnographic, Archaeological, Ethnohistoric, and Contemporary Cairn References. Unpublished manuscript on file with the authors.

Veseth, R. and C. Montagne
1980 Geologic Parent Materials of Montana Soils. Montana State University and USDA-Soil Conservation Service *Bulletin 721.* November, 1980.

F. Photographs:
See attached photos

G. Recorder: P. Rennie **Date:** 10-24-2007

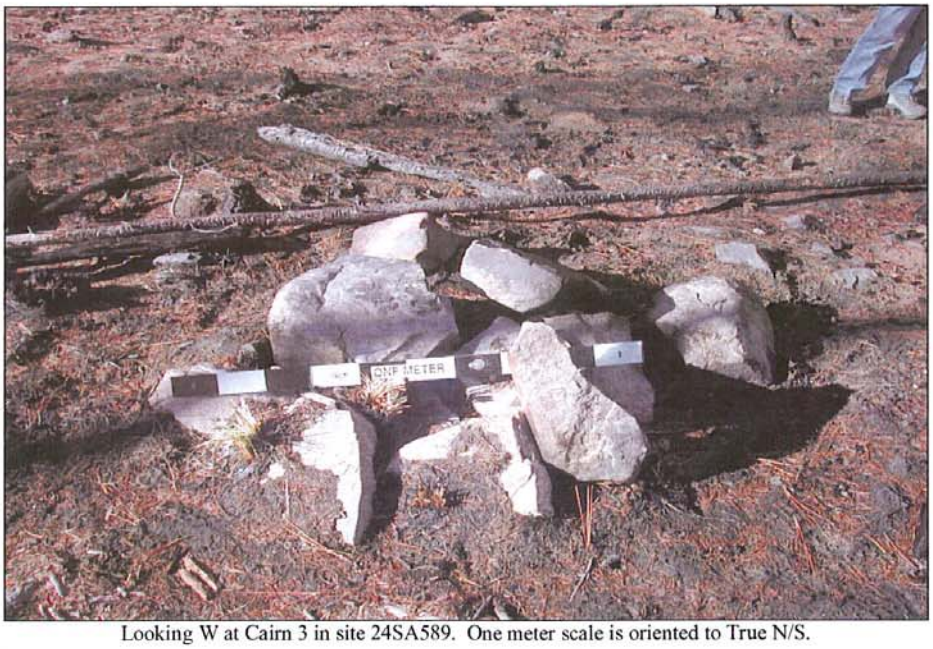
H. Map: Attach Site Sketch map (if applicable) and Photocopy of 7.5' Quad



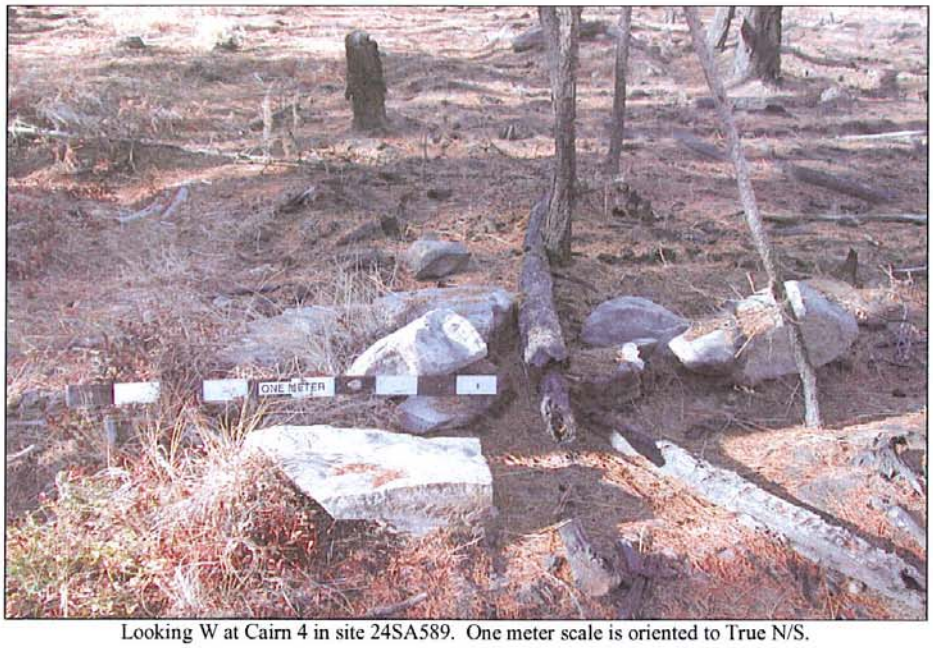
Looking SW at general setting of site 24SA589.

Looking W at Cairn 1 in site 24SA589. One meter scale is oriented to True N/S.

Looking W at Cairn 2 in site 24SA589. One meter scale is oriented to True N/S.

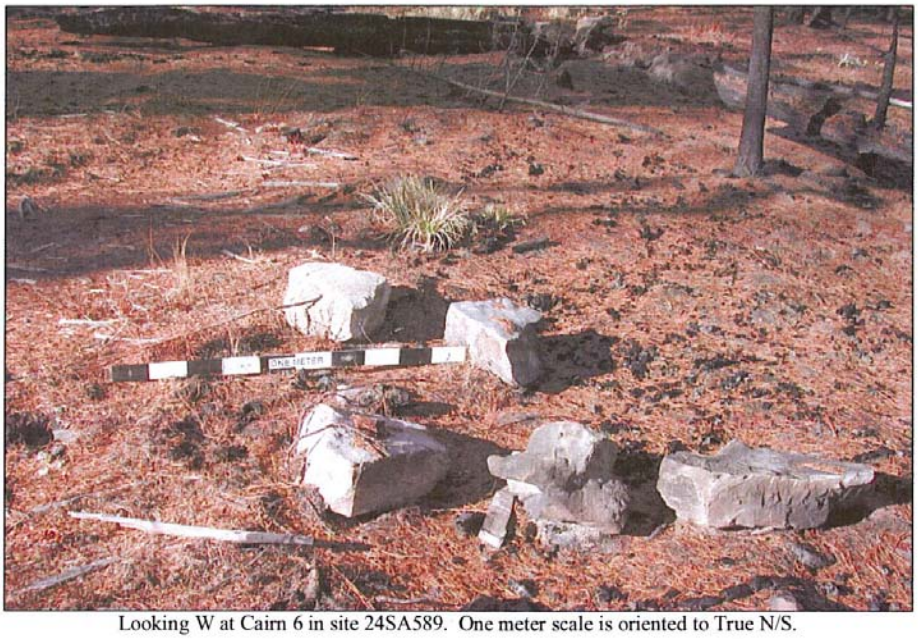


Looking W at Cairn 3 in site 24SA589. One meter scale is oriented to True N/S.

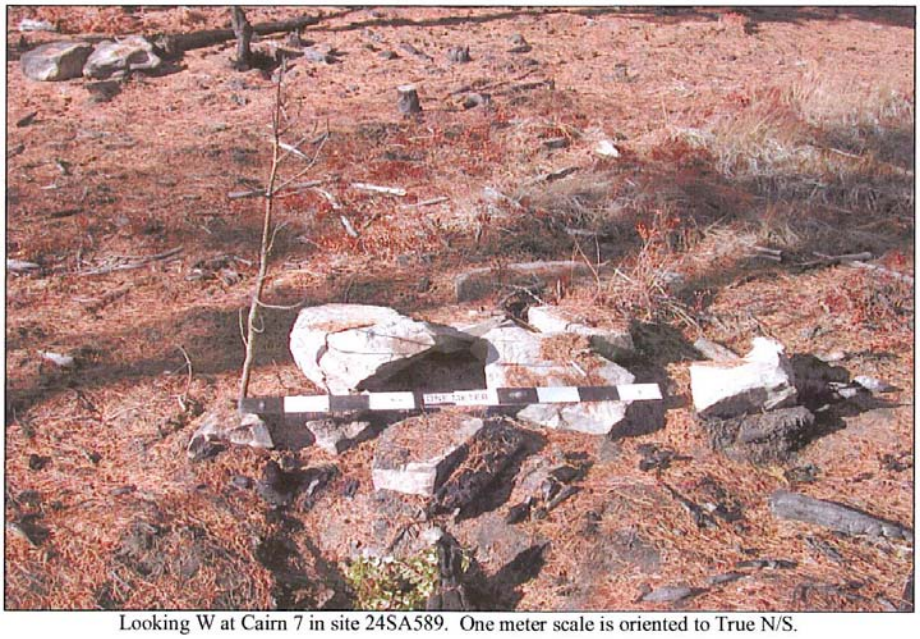


Looking W at Cairn 4 in site 24SA589. One meter scale is oriented to True N/S.

Looking W at Cairn 5 in site 24SA589. One meter scale is oriented to True N/S.

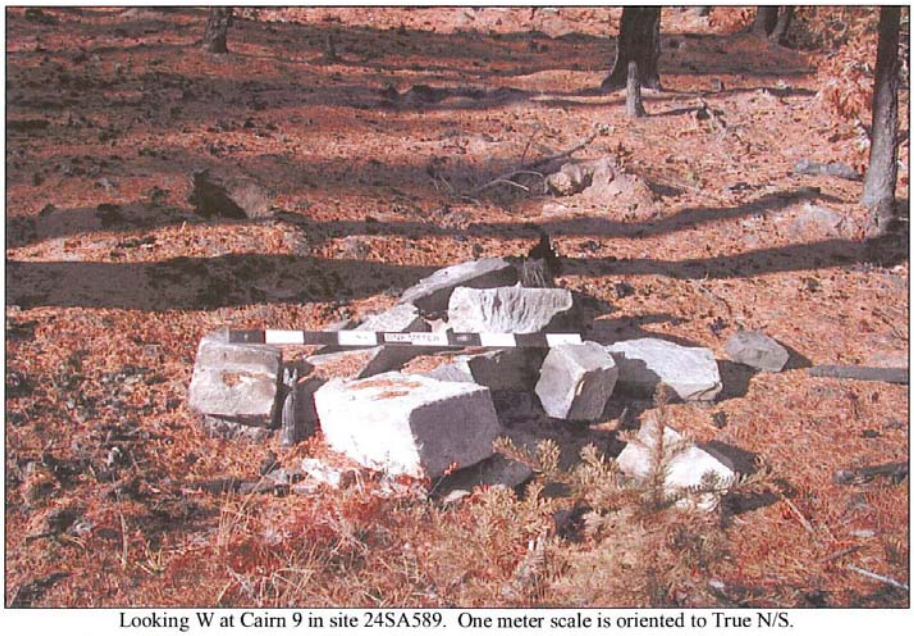


Looking W at Cairn 6 in site 24SA589. One meter scale is oriented to True N/S.



Looking W at Cairn 7 in site 24SA589. One meter scale is oriented to True N/S.

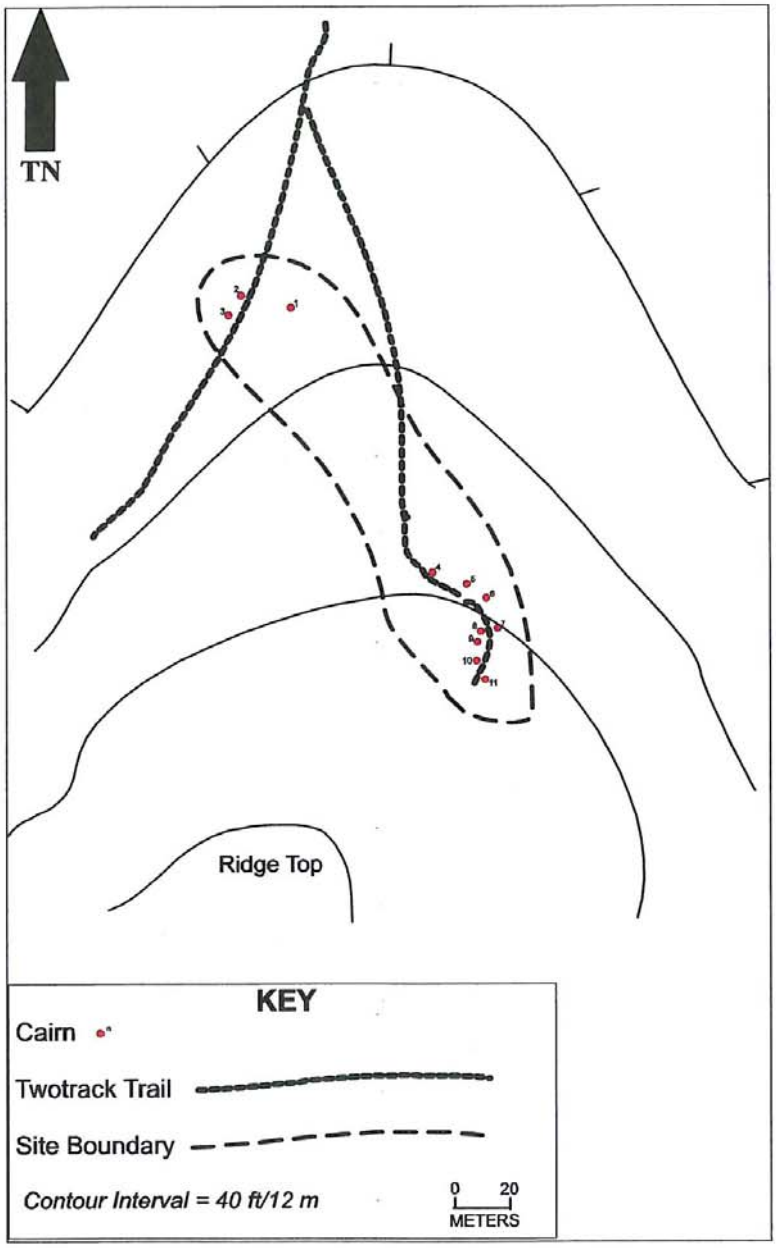
Looking W at Cairn 8 in site 24SA589. One meter scale is oriented to True N/S.



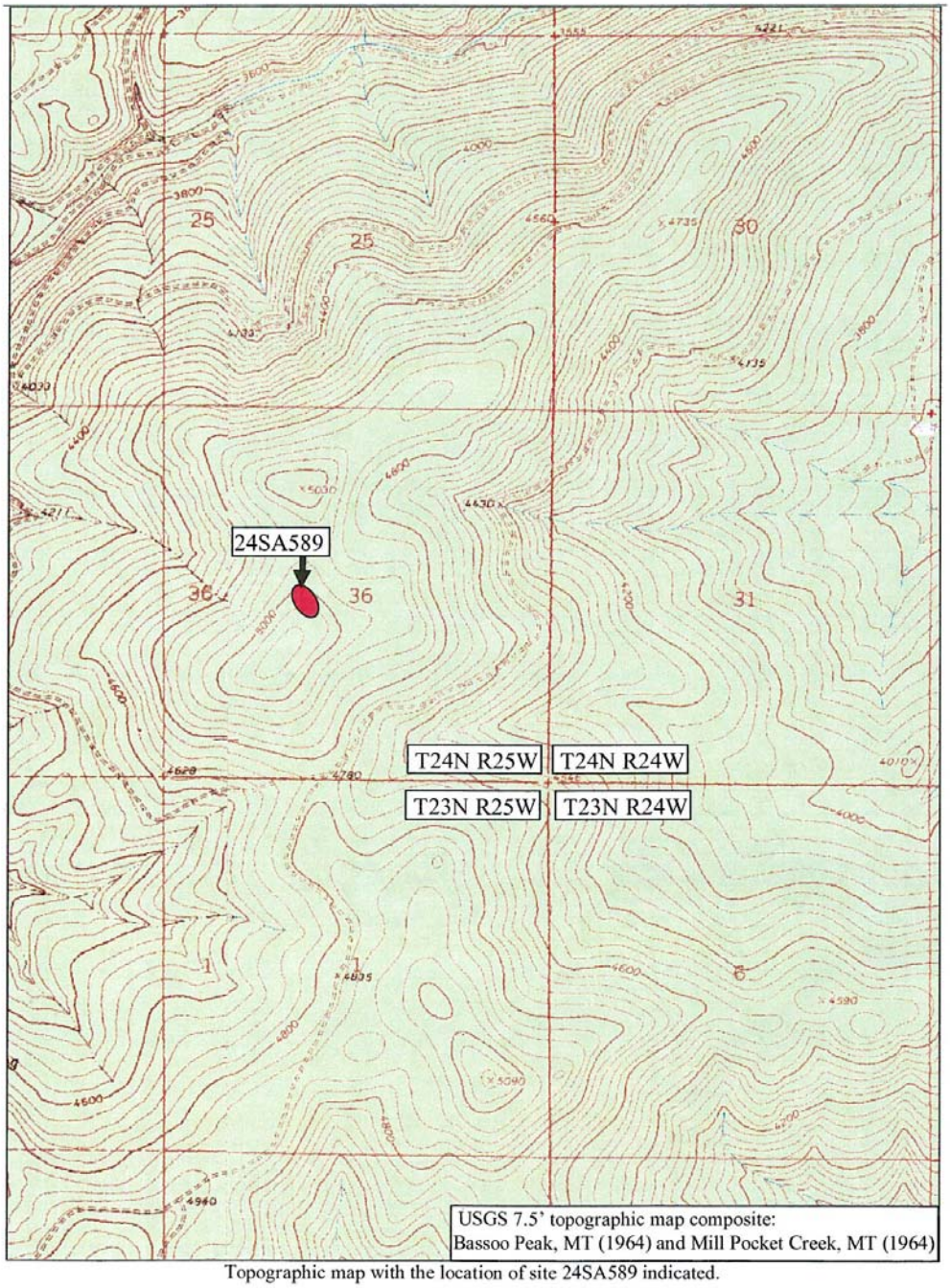
Looking W at Cairn 9 in site 24SA589. One meter scale is oriented to True N/S.

Looking W at Cairn 10 in site 24SA589. One meter scale is oriented to True N/S.

Looking W at Cairn 11 in site 24SA589. One meter scale is oriented to True N/S.



Plan sketch of site 24SA589



Topographic map with the location of site 24SA589 indicated.

Attachment III

Alternative Practice to the
State Forest Land Management Rules

Request for Approval of Alternative Practices to the State Forest Land Management Administrative Rules (ARM 36.11.401-450)

Completing this form, attaching any supporting maps and documentation, and submitting it to the Forest Management Bureau Chief, serves as the formal request for site-specific alternative practices pursuant to ARM 36.11.449. Once signed by the Bureau Chief the form serves as the decision document.

ARM 36.11.449 reads:

(1) The department shall comply with ARM 36.11.401 through 36.11.445 when conducting forest management activities, unless approval has been obtained from the forest management bureau chief for alternative forest management practices. Alternative practices may be designed in response to site-specific conditions encountered while planning forest management activities.

(2) The forest management bureau chief may approve proposed alternative practices only if such practices would be otherwise lawful, and it is determined with reasonable certainty that the proposed alternative practices would provide adequate levels of resource protection.

Description of the Project

(Provide a summary with enough information to put the request in context, including type of project, location, related environmental documents, etc. If a timber project: estimated volume, summary of road work, etc. as relevant to the alternative practices.)

(Note: See the Cook Mountain Draft EA October 2007; Mill Pocket EA draft November 2007 for complete project descriptions and environmental analyses).

Two timber salvage projects are proposed on the Plains Unit of the Northwest Land Office (see Figure 1). The primary objective of fire salvage operations following the Chippy Creek Fire is to effectively recover value of timber killed, damaged, or otherwise injured during the fire event of August/September 2007. Loss to the associated trusts is to be minimized. The secondary objective for this project is to promote timber regeneration and vegetative recovery on Trust lands burned in the fire event.

The Cooked Mountain project area is located in Sections 6,16, 20, 28 Township 23N, Range 26W, and Section 36, Township 24N, Range 27W, approximately 19 miles north of Plains, Montana. On this project, the Department of Natural Resources and Conservation (DNRC) proposes to sell approximately 56,000 tons (8.0 MMBF). This action would affect 1,120 acres of burned forest and produce an estimated revenue of $800,000.00 for the Common Schools (C. S.) and $800,000.00 for the Public Buildings (P. B.)Trust Grants. The project area would be divided into two timber sales—Cooked Mountain and Seared Gulch (see Figure 2).

The Mill Pocket project area is located approximately 13 miles north of Hot Springs, Montana, in Section 36, Township 24N, Range 25W. This action would affect 572 acres of burned forest and is projected to produce at least 3 million board feet (cruise data will be available soon).

The Rule(s)

ARM # and exact text of the rule(s)

ARM 36.11.403 defines "Black-backed woodpecker habitat" as "fire-killed stands of trees greater than 40 acres, less than five years since disturbance, and with greater than 40 trees per acre that are greater than or equal to nine inches DBH." Under ARM 36.11.438(1)(a), "The department shall minimize mechanized activity within 0.25 mile of black-backed woodpecker habitat during the period April 15 through July 1."

ARM 36.11.438(1)(b) and (c) also specify that "the department shall manage approximately 10% of the burned acreage in an unharvested condition that is broadly representative of the entire burn (i.e.,

similar habitat types, fire intensity, elevations, stand density, and stand age class prior to burn) to be determined using site-specific information at the project level. The department shall manage such areas in relatively contiguous blocks favoring close proximity to fire-killed deferred stands on neighboring ownerships considering the habitat needs of black-backed woodpeckers" and "the department shall leave standing sub-merchantable burned trees where soil, slope stabilization, and human safety concerns allow."

The Alternative Practices Being Requested:

Describe in detail the alternative practices that would be conducted instead of applying the rule in whole or in part.

The proposed alternative practice would allow contractors to conduct harvesting activities in the remaining unharvested portions of units in the Seared Gulch and Mill Pocket Timber Sales during the black-backed woodpecker nesting season (April 15- July 1) as weather and other environmental conditions allow (i.e. all other Rules and BMPs would be followed). This would include allowance of mechanized activities in within 0.25 miles of suitable black-backed woodpecker habitat and in up to 577 and 572 acres of suitable black-backed woodpecker habitat and on the Seared Gulch and Mill Pocket sales, respectively.

How Adequate Levels of Resource Protection Would be Provided

Provide a brief discussion of the potential effects of the target resource(s), detailed description of the alternate mitigations incorporated, and justification for how adequate levels of resource protection are being provided under the proposal.

By allowing harvesting and associated activities during the nesting season, minor direct and indirect effects to black-backed woodpeckers could occur. Harvesting actions could potentially affect up to 577 acres on the Seared Gulch sale and approximately 572 acres on the Mill Pocket sale. However, as harvesting should have already started at least two months prior to the onset of the nesting season, much of this acreage will have been harvested and thus no longer be appropriate habitat for birds to select for nesting. Furthermore, because harvesting is expected to take place on neighboring sections of Plum Creek and Tribal lands prior to the nesting season, the general area will most likely not be appealing habitat for black-backed woodpeckers.

Thus, there is a slight risk of direct effects to nesting pairs of black-backed woodpeckers in the remaining portions of sale units that would be harvested during the nesting period. Additionally, there is a risk of indirect effects to woodpeckers using the harvest units for foraging resources. The cumulative effects of the proposed action would be the reduction of black-backed woodpecker habitat on less than 2% of the Chippy Creek Fire area. Although this would be additive to the reductions in habitat caused by salvage operations on much of the private and Tribal land, approximately 50,000 acres of black-backed woodpecker habitat would remain on the landscape, with much of it located on Forest Service lands that will not be salvaged or disturbed by logging-related activities (D. Wrobleski, Lolo National Forest, pers. comm. Sept 2007). According to Samson (2006), this represents more than enough habitat to support a viable population of black-backed woodpeckers in western Montana.

To mitigate potential effects to black-backed woodpeckers, and to ensure that adequate resource protection is provided, , the following practices would be implemented:

- Patches of black-backed woodpecker habitat would be reserved in an unharvested condition to maintain suitable nesting and foraging habitat for black-backed woodpeckers in the proposed project areas, including 217 acres (16%) of the burned acreage in the Cook Mtn project area and 56 acres (9%) in the Mill Pocket sale area
- An additional 150 acres of black-backed woodpecker habitat in the Little Bitterroot parcel (Section 16, 24N, R24W) would be deferred from harvest for at least five years and would serve as additional black-backed woodpecker habitat; thus across all forested DNRC lands

burned in the Chippy Creek Fire (2,106 acres), 20% (423 acres) would be deferred from harvest to provide undisturbed black-backed woodpecker foraging and nesting habitat; this amount exceeds the recommended 10% in ARM 36.11.438(1)(b)

- Timing restrictions to minimize mechanized activities would still be in place on the Cooked Mountain harvest units (543 acres) and associated unharvested leave patches (169 acres)
- The unharvested "leave patches" that could be disturbed by nearby mechanized activity during the nesting season would include 48 acres in Section 28 of the Seared Gulch sale and 56 acres in the Mill Pocket sale; efforts would be made, through contract language and sale administration, to have contractors complete the road construction and start logging near the leave patches (within 0.25 miles) as soon as possible, in an effort to minimize any disturbance near those leave patches once the nesting season commences

Thus, in order to deviate from ARM 36.11.438(1)(a), the aforementioned mitigations would be implemented under the proposed action in efforts to provide undisturbed habitat in the "leave patches" and in the Little Bitterroot parcel for black-backed woodpeckers during the nesting season. Provided the mitigations are properly implemented, there would be low risk of direct and indirect effects to black-backed woodpeckers as a result of the proposed action. Given the extensive amount of high quality black-backed woodpecker habitat that exists on unharvested USFS lands within the Chippy Creek Fire perimeter, as well as 100,000's of other acres across NW Montana from 2007 fires, the proposed DNRC actions should provide adequate protection for this species.

The Site-Specific Conditions Encountered that the Alternative Practices are Designed to Address

Describe the site-specific conditions encountered including the reasons for the request, and provide as appropriate, information that substantiates the request such as an economic analysis, scientific references, personal communications, and maps.

Throughout the proposed units on the Seared Gulch and Mill Pocket Timber Sales there are approximately 1 MMBF and 2-3 MMBF of ponderosa pine (respectively) interspersed with other conifer species. Although the pine is of high value now, burned pine quickly devalues due to a fungus that causes "blue stain" as the wood dries. Thus by the heat of the summer (~mid-July), the pine resources will lose value. There is concern from foresters and potential project bidders that if they are not able to extract the pine in time, it may affect bid prices substantially. The highest value Ponderosa Pine on the site is currently bringing $580/mbf, and blued $290/mbf delivered to a local mill that cuts Pondersa Pine into random width shop lumber. This equates to around $58/ton versus $29/ton in net stumpage value to the state. We expect to be able to salvage an additional 6000 tons due to the Alternative Practice as proposed. That will translate into a captured value of $174,000 to the state.

Due to the timing of project analysis, approval, and bidding, logging operations could start—at the earliest—on Dec. 1, 2007 for Seared Gulch and Jan. 1, 2008 for Mill Pocket. In the Thompson River vicinity, spring break-up often occurs as early as mid-February to early-March. Under ARM 36.11.438(1)(a), operators are to minimize mechanized activities in black-backed woodpecker habitat during the nesting season for this sensitive species, April 15 thru July 1. The concern, therefore, is that it may not be feasible for contractors to extract all of the timber from the proposed units before the onset of spring break-up; without the Alternative Practice, salvaging work could not resume until July 1, at which point the pine would be rapidly drying and potentially losing value due to blue staining.

Timeline

Indicate if there are sensitive timelines related to the decision.

The Cook Mountain Draft EA is in internal review, with a final version expected on Oct. 29, 2007 with the expectation that if the Action alternative is selected, the package will be presented to the Land Board on Nov. 19, 2007. Foresters and resource specialists are currently preparing the draft EA for the Mill Pocket project. A draft should be available for internal review by Nov. 19, 2007 with the expectation that if the Action alternative is selected, the sale package will be presented to the Land Board in mid-December 2007.

Signature of Project Leader **Date**

David M. Ohm 10/31/07

To have Ulsen @ Plains Unit

Review and Decision by the Forest Management Bureau Chief

Upon receipt of the request, the Chief will contact the project leader to (1) establish a deadline for the decision and (2) discuss whether any additional information or discussions are needed for the Chief to make a decision on the request. Typically there will have been informal discussions preceding the formal request.

Decision

Pursuant to ARM 36.11.449, the Forest Management Bureau Chief may approve proposed alternative practices if they "*provide adequate levels of resource protection*". This alternative practice request for black-backed woodpeckers is associated with the fire salvage sales on the Plains Unit within the Chippy Creek Fire perimeter.

After careful review of the enclosed information, I approve this request for an alternative practice for the following reasons:

- Within the proposed fire salvage areas, approximately 20% of the burned timber would be deferred from harvest to provide undisturbed black-backed woodpecker foraging and nesting habitat. This provides double the habitat compared to the 10% recommended in ARM 36.11.438(1)(b).
- Timing restrictions (April 15 through July 1) would still apply on the Cooked Mountain salvage sale, but not on the Seared Gulch and Mill Pocket Fire Salvage Sales.
- While timing restrictions would not apply to the Seared Gulch and Mill Pocket Fire Salvage Sales, efforts would be made to complete mechanized activities such as road building and harvesting during the winter months within 0.25 miles of the unharvested leave patches prior to nesting season.
- Approximately 50,000 acres of black-backed woodpecker habitat would remain on the landscape associated with the project areas, with much of it located on Forest Service lands that will not be salvaged or disturbed by logging-related activities (D. Wrobleski, Lolo National Forest, pers. comm. Sept 2007).
- Adjacent private and tribal landowners will likely be salvaging and using some of the same transportation systems during the spring period from April 15 to July 1st as weather and road conditions permit.
- Throughout the proposed units on the Seared Gulch and Mill Pocket Timber Sales there are approximately 1 MMBF and 2-3 MMBF of ponderosa pine (respectively) interspersed with other conifer species. Only a portion of this ponderosa pine volume can realistically be salvaged this winter. If no salvaging were done from April 15 to July 1st, the remaining ponderosa pine will blue stain which reduces the value by about 50%. This alternative practice would allow an estimated 6,000 tons of additional ponderosa pine to be salvaged from April 15 to July 1st which is worth an additional $174,000 in stumpage value.

Given these reasons, I believe this alternative practice provides adequate resource protection for black-backed woodpeckers and strikes the best balance of proper stewardship of the resources and value recovery for the trust beneficiaries.

Signature

David A. Gravelle

Forest Management Bureau Chief

11/14/07

Date

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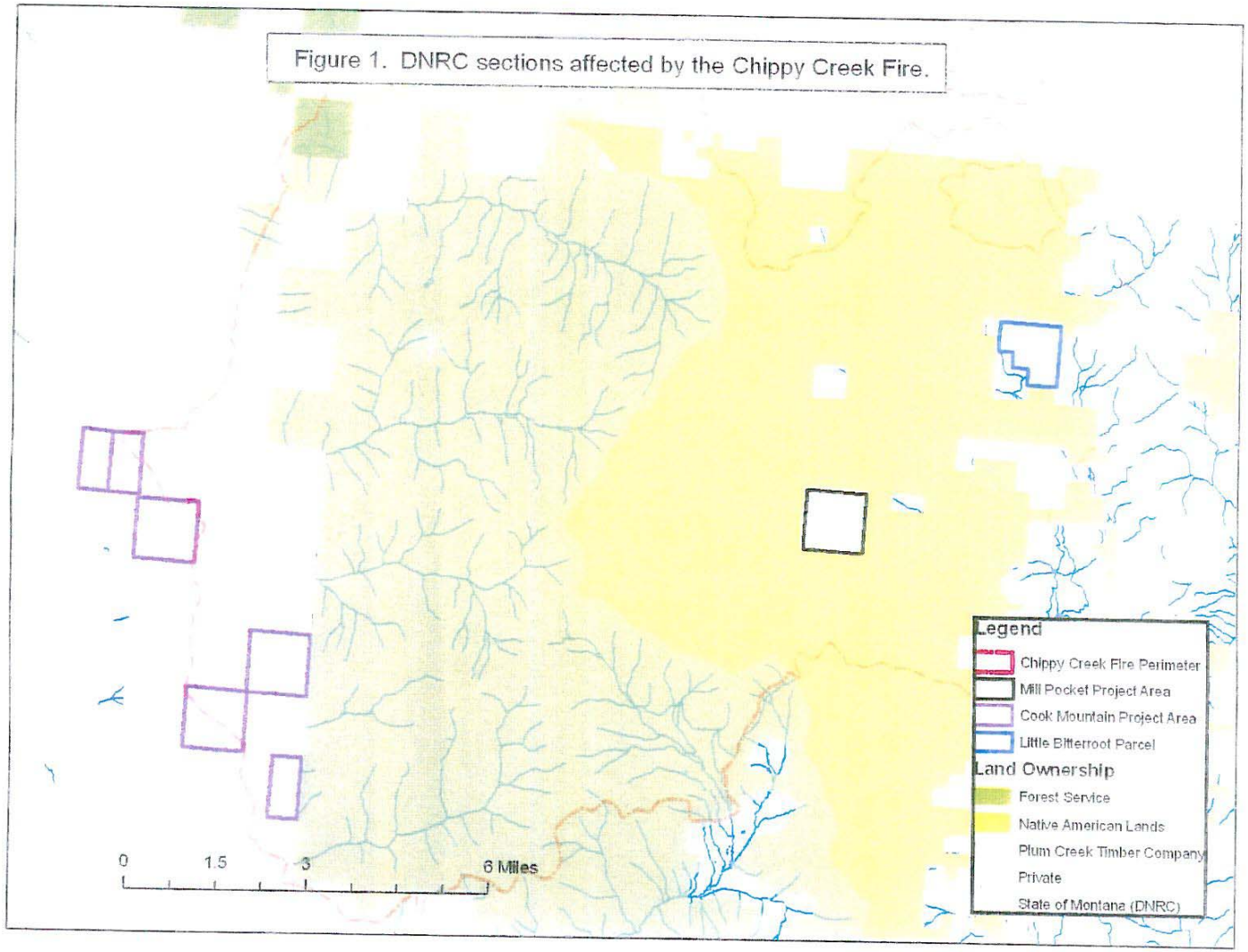


Figure 1. DNRC sections affected by the Chippy Creek Fire.
Legend
Chippy Creek Fire Perimeter
Mill Pocket Project Area
Cook Mountain Project Area
Little Bitterroot Parcel
Land Ownership
Forest Service
Native American Lands
Plum Creek Timber Company
Private
State of Montana (DNRC)
0
1.5
3
6 Miles

Figure 2. Black-backed woodpecker habitat in the proposed Cook Mountain salvage sales.

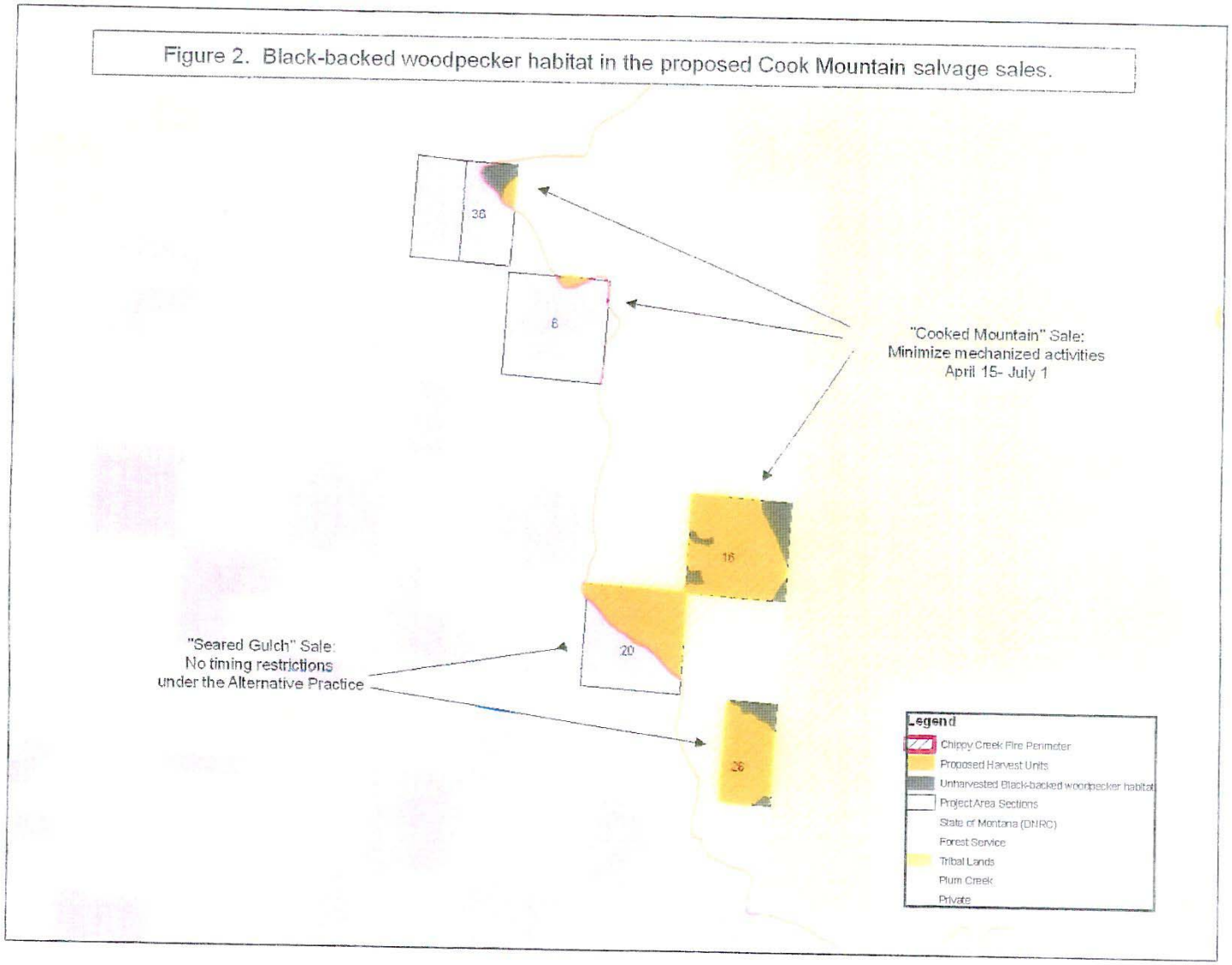
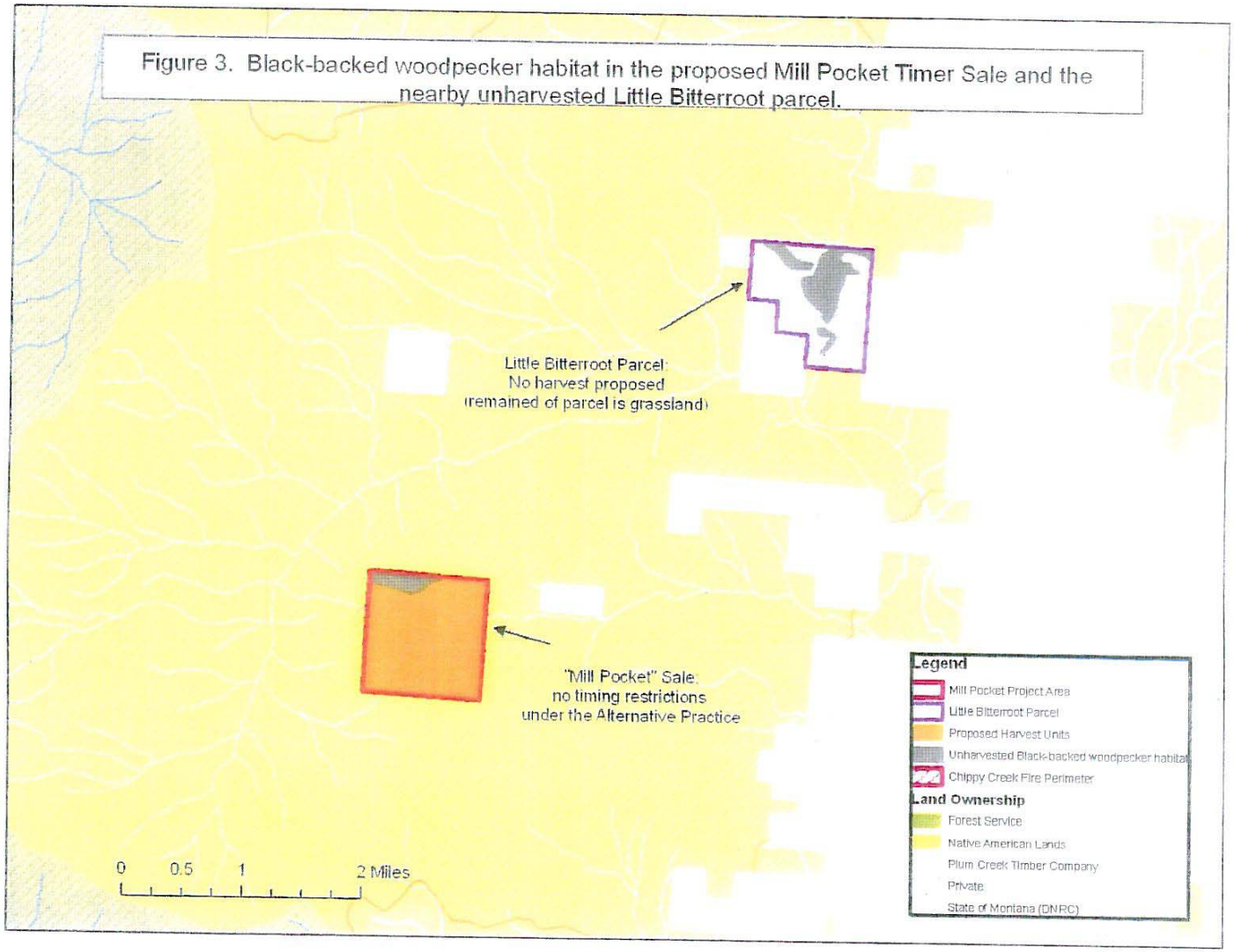


Figure 3. Black-backed woodpecker habitat in the proposed Mill Pocket Timer Sale and the nearby unharvested Little Bitterroot parcel.



Attachment IV

Harvest Prescriptions

Mill Pocket Salvage
Proposed Harvest Prescriptions

Harvest Unit: 36-1 **Harvest Unit Acres**: 506

Location: Section 36, Township 24 North, Range 25 West

Elevation: 4400' – 5000' **Slope:** 5 – 35% A**spect:** Mainly southeasterly

Habitat Type: PSME/CARU; ABGR/LIBO.

Current Cover Types, Pre-Fire Condition:
western larch / Douglas-fir; ponderosa pine, lodgepole pine, mixed conifer

Potential Vegetation Classes: western larch / Douglas-fir; ponderosa pine, mixed conifer

Soil Types: Mitten-Tevis complex; Winkler gravelly sandy loam; Mitten gravelly silty loam; Tevis gravelly loam; Rumblecreek gravelly loam; Winfall gravelly loam.

Description of Existing Stand:
This unit is located throughout the majority of the parcel, excluding the NW and NE corners; the BIA Road L2050 bisects the unit. The proposed new construction road 36-1 will separate this unit from harvest unit 36-2. This unit is comprised of fourteen (full or partial) stands identified in the Stand Level Inventory (SLI).

Logging activities have occurred on the proposed project area since the late 1940's. Section records for the Mill Pocket parcel show timber harvests totaling 5.9 million board feet from 1948 – 50. There have also been numerous post and Christmas tree removal permits in the parcel, the last being issued in 1960. There is an area of approximately 15 acres with evidence of unauthorized post and pole harvest in the parcel, which occurred approximately 10 – 20 years ago. Pre-fire Current Cover Types and Potential Vegetation Class stand maps can be viewed in Attachment I, Maps and Project Plan.

In the pre-fire condition of 2007 ponderosa pine and western larch dominated the upper canopy level with tree heights of 80 - 100 feet and average DBH of 18 - 20", scattered individuals were greater than 25". Lodgepole pine and Douglas-fir dominated the middle canopy level, with tree heights of 50 – 60 feet and average DBH of 9 - 10". Douglas-fir and grand fir made up the understory. Before the fire, the Douglas-fir in all strata, and areas of western larch were heavily infested with dwarf mistletoe.

The unit was burned during the Chippy Creek Fire. Fire intensity was generally high but varied and there is evidence of crown runs, individual and group torching throughout the unit. The southern and eastern portions of the unit were mostly moderate intensity underburned. The western portion of the unit burned with the greatest intensity with very high mortality in seedling, sapling, pole, and saw timber size classes leaving no significant canopy cover. Most all of the downed woody debris was consumed. A fire intensity map can be viewed in Attachment I, Maps and Project Plan.

In the pre-fire condition, the primary insect and disease agents in the stands were widespread infestations of: Dwarf mistletoe in the Douglas-fir and western larch, mountain pine beetle ***(****Dendroctonus ponderosae)* in the ponderosa pine and lodgepole pine, Douglas-fir beetle (*Dendroctonus pseudotsugae*) in the Douglas-fir, and Indian paint fungus *(Echinodontium tinctorium)* in the grand fir *(Abies gradis).* Post-fire these insects plus the Red turpentine beetle *(Dendroctunus valens)* are active in the fire-stressed and dead trees throughout the burned area.

Treatment Objectives:

- Remove merchantable fire-killed and stressed trees, along with mistletoe-infected Douglas-fir and western larch from the overstory to promote regeneration of seral species and long-term forest health.
- Promote ponderosa pine and western larch regeneration in areas where the seed source exists.

Prescribed Treatment:

- Leave tree marking. Salvage seed tree harvest; retain snags at a variable spacing of 85 – 105 feet. Favor leaving ponderosa pine, western larch and Douglas-fir snags in that order.
- Assess crown, cambium and root collar damage of any green-topped ponderosa pine and western larch, retain them if they are disease free and have a high probability of survival, leaving 4 – 6 trees per acre. Do not leave mistletoe infected western larch or Douglas-fir as leave trees.
- Retain live and dead sub-merchantable trees where soil stability and safety concerns allow for wildlife habitat.

Harvest Method:

- Ground based harvesting operations are applicable to this unit.
- Where possible utilize existing roads or skid trails that do not violate BMP's, with closures and surface drainage installed upon completion of harvest activities.
- Operations within the SMZ shall be completed during frozen or snow covered ground conditions.
-

Hazard Reduction:

- Pile and burn or grind slash at landings.
- Woody debris retention requirements of 10 – 15 tons per acre of material 3" in diameter or greater to encourage soil stability.

Regeneration / Site Preparation:

- Fire activity has provided scarification to encourage natural regeneration.
- Seed tree survival and natural regeneration success should be evaluated in approximately 3-5 years.
- Plant ponderosa pine and western larch as needed to achieve desired stocking and species diversity.

Anticipated Future Treatments:

- Stand conditions would be monitored for future salvage opportunities related to insect and disease outbreaks, severe weather events, or other unanticipated circumstances on a case by case basis.
- This stand would be evaluated for regeneration and possible pre-commercial thinning opportunities as the stand progresses in age.

Harvest Unit: 36-2 **Harvest Unit Acres**: 66

Location: Section 36, Township 24 North, Range 25 West

Elevation: 4200' – 4700' **Slope:** 35 –55% **Aspect:** East to Southeast

Habitat Type: PSME/CARU; ABGR/LIBO

Current Cover Type, Pre-Fire Condition: ponderosa pine

Potential Vegetation Class: ponderosa pine

Soil Type: Tevis gravelly loam; Winkler; Winkler gravelly sandy loam; Mitten-Tevis complex.

Description of Existing Stand:
This unit is located in the NE quarter of the section; the BIA Road L2050 bisects the unit. The proposed new construction road 36-1 will separate this unit from harvest unit 36-1. This unit is comprised of two (partial) stands as identified in the Stand Level Inventory (SLI).

Logging activities have occurred on the proposed project area since the late 1940's. Section records for the Mill Pocket parcel show timber harvests totaling 5.9 million board feet from 1948 – 50. There have also been numerous post and Christmas tree removal permits in the parcel, the last being issued in 1960. There is an area of approximately 15 acres with evidence of unauthorized post and pole harvest in the parcel, which occurred approximately 10 – 20 years ago. Pre-fire Current Cover Types and Potential Vegetation Class stand maps can be viewed in Attachment I, Maps and Project Plan.

In the pre-fire condition of 2007 ponderosa pine and western larch dominated the upper canopy level with tree heights of 80 - 100 feet and average DBH of 18 - 20". Lodgepole pine and Douglas-fir dominated the middle canopy level, with tree heights of 50 – 60 feet and average DBH of 9 - 10". Douglas-fir and grand fir made up the understory. Before the fire, the Douglas-fir in all strata, and areas of western larch were heavily infested with dwarf mistletoe.

The unit was burned during the Chippy Creek Fire. Fire intensity was generally high but varied and there is evidence of crown runs, individual and group torching throughout the unit. The southern aspects within the unit burned with the greatest intensity with very high mortality in seedling, sapling, pole, and saw timber size classes leaving no significant canopy cover. Most all of the downed woody debris was consumed. A fire intensity map can be viewed in Attachment I, Maps and Project Plan.

In the pre-fire condition, the primary insect and disease agents in the stands were widespread infestations of: Dwarf mistletoe in the Douglas-fir and western larch, mountain pine beetle ***(****Dendroctonus ponderosae)* in the ponderosa pine and lodgepole pine, Douglas-fir beetle (*Dendroctonus pseudotsugae*) in the Douglas-fir, and Indian paint fungus *(Echinodontium tinctorium)* in the grand fir *(Abies gradis).* Post-fire these insects plus the Red turpentine beetle *(Dendroctunus valens)* are active in the fire-stressed and dead trees throughout the burned area.

Treatment Objectives:

- Remove merchantable fire-killed and stressed trees, along with mistletoe-infected Douglas-fir and western larch from the overstory to promote regeneration of seral species and long-term forest health.
- Promote ponderosa pine and western larch regeneration in areas where the seed source exists.

Prescribed Treatment:

- Leave tree marking. Salvage seed tree harvest; retain snags at a variable spacing of 85 – 105 feet. Favor leaving ponderosa pine, western larch and Douglas-fir snags in that order.
- Assess crown, cambium and root collar damage of any green-topped ponderosa pine and western larch, retain them if they are disease free and have a high probability of survival, leaving 4 – 6 trees per acre. Do not leave mistletoe infected western larch or Douglas-fir as leave trees.
- Retain live and dead sub-merchantable trees where soil stability and safety concerns allow for wildlife habitat.

Harvest Method:

- Line skidding with conventional, whole tree skidding operations are applicable to this unit.
- Optional mechanical harvesting with line skidding south of the SMZ on slopes <50%.

Hazard Reduction:

- Pile and burn or grind slash at landings.
- Woody debris retention requirements of 10 – 15 tons per acre of material 3" in diameter or greater to encourage soil stability.

Regeneration / Site Preparation:

- Fire activity has provided scarification to encourage natural regeneration.
- Seed tree survival and natural regeneration success should be evaluated in approximately 3-5 years.
- Plant ponderosa pine and western larch as needed to achieve desired stocking and species diversity.

Anticipated Future Treatments:

- Stand conditions would be monitored for future salvage opportunities related to insect and disease outbreaks, severe weather events, or other unanticipated circumstances on a case by case basis.
- This stand would be evaluated for regeneration and possible pre-commercial thinning opportunities as the stand progresses in age.

Attachment V

Mitigations

Mitigation Measures

Roads: A transportation system minimizing road miles and meeting all Best Management Practices (BMP) has been designed by DNRC. Roads constructed in association with this project total .78 miles, and would remain in place following completion of the project. Following salvage activities, the new road would be scarified, grass seeded and approximately 500 feet reclaimed, to effectively close the road. There would be recondition and improvement of existing roads totaling 1.7 miles, involving road surface drainage and opening for safe hauling traffic. Following salvage activities, opened roads would be water barred, grass seeded and closed to vehicle traffic with Kelly hump or earthen berm closures. There are approximately 1.2 miles of existing roads, the purchaser will have the option of using these roads for skidding and hauling during the course of the sale. Upon completion of the logging, they will have debris and slash scattered in them, and drainage features constructed as appropriate. They will be closed with Kelly hump or earthen berm closures and grass seeded and fertilized at the direction of the Forest Officer. Upon completion of road work, all haul roads would meet BMP standards.

Historic / Cultural Properties: Identified cultural properties would be flagged and avoided during proposed harvest activities. Harvest plans would be designed to minimize ground disturbance. Any evidence of cultural resources discovered during sale administration will be left undisturbed and reported to the Tribal Preservation Department. (See Attachment I, Harvest Plan; Attachment IV, Harvest Unit Prescriptions).

Wildlife: The following issues have been identified, with mitigation measures incorporated into the proposed project.

Black-backed Woodpeckers:

- *Retain at least 56 acres of the project area in an unharvested condition to provide reserved black-backed woodpecker foraging and nesting habitat; defer harvest of burned forest on the Little Bitterroot parcel (Section 16, 24N, R24W) to provide additional black-backed woodpecker habitat*
- *Make efforts to have contractors complete the road construction and start logging near the leave patches as soon as possible, in an effort to minimize any disturbance near those leave patches once the nesting season commences (April 15- July 1)*

Flammulated owls:

- *Follow snag retention protocols set by ARM 36.11.411, retaining an average of at least 2 snags and 2 snag recruits >21" dbh (or the next largest size available) per acre of harvested land (or additional snags if snag recruits are not available)*
- *Favor ponderosa and larch, then Douglas-fir snags; favor clumping snags where possible, and retaining snags >200 yards from open roads*
- *Retain occasional dense patches of conifer regeneration and shrubs if available.*

Pileated Woodpeckers:

- *Follow snag retention protocols set by ARM 36.11.411, retaining an average of at least 2 snags and 2 snag recruits >21" dbh (or the next largest size available) per acre of harvested land (or additional snags if snag recruits are not available)*
- *Favor ponderosa and larch, then Douglas-fir snags; favor clumping snags where possible, and retaining snags >200 yards from open roads*
- *Retain coarse woody debris where applicable (to provide foraging opportunities)*

Big Game:

- *Retain dense patches of conifer regeneration and shrubs where available and practicable.*
- *Where applicable, close roads and skid trails opened with the proposed activities to reduce the potential for motor vehicle use.*

Soils: Limit equipment operations to periods when soils are relatively dry, (less than 18% soil moisture), frozen or snow covered (12 inches packed or 18 inches unconsolidated) to minimize soil compaction and rutting, and maintain drainage features. Check soil moisture conditions prior to equipment start-up.

On ground skidding units, the logger and sale administrator will agree to a general skidding plan prior to equipment operations. Skid trail planning would identify which main trails to use, and what additional trails are needed. Trails that do not comply with BMPs (i.e. draw bottom trails) would not be used and may be closed with additional drainage installed where needed or grass seeded to stabilize the site and control erosion.

Tractor skidding should be limited to slopes less than 40% unless the operation can be completed without causing excessive erosion. Short steep slopes above incised draws may require a combination of mitigation measures based on site review, such as adverse skidding to ridge or winch line skidding from more moderate slopes less than 40%. All cable yarding must have lift on the leading end of the log to limit soil disturbance.

Keep skid trails to 20% or less of the harvest unit acreage. Provide for drainage in skid trails and roads concurrent with operations.

In areas of moderate to high burn severity, contour fall 5-10 sub-merchantable trees per acre to limit soil disturbance, promote nutrient cycling and moisture retention.

Retain 10 to 15 tons large woody debris and a majority of all available fine litter feasible following harvest.

Regeneration: Plant seedlings of the potential vegetation class species where soil conditions allow and there is little or no seed source.

Hydology: All forestry Best Management Practices (BMP) would apply to limit the potential for sediment delivery to draws. This would further limit the potential for sediment indroduction.

Weed Management: Roads and skid trail approaches would be seeded and spot treated with chemicals following construction and project completion. Prior to entering the site, off-road logging equipment would be cleaned and inspected through the timber sale contact to avoid seed migration. Roads would be closed following the sale to avoid migration of weed seed into the area. Post-harvest, the area would be included in the Plains Unit's integrated weed management program.

Attachment VI

Consultants and References

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